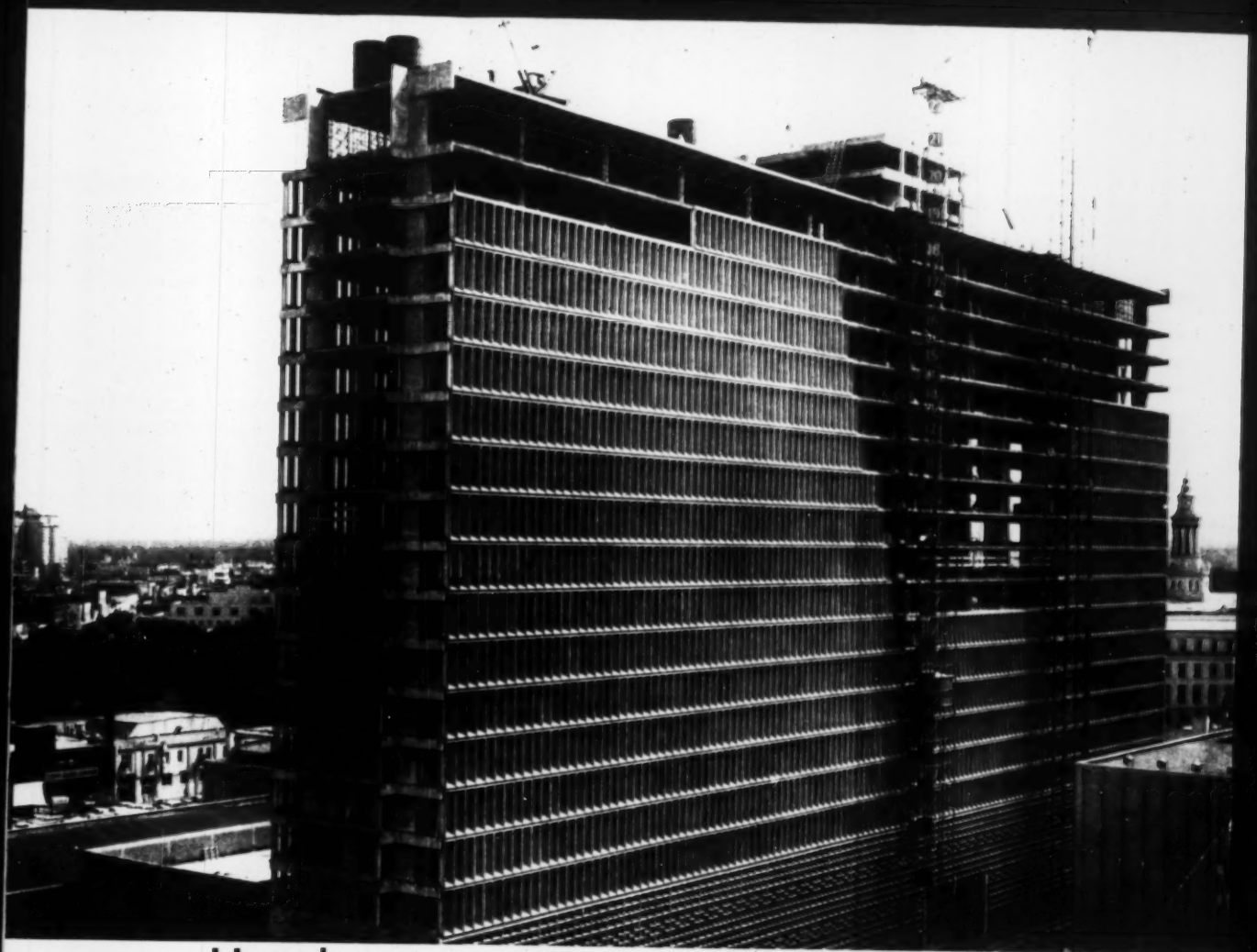
ENGINEERING NEWS-RECORD

OCT. 22, 1959

▶ Ideas for tomorrow's bridges p.42
▶ PC's expert: Engineers with a big say p.44



Hotel gets precast window walls p.38

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Economical Supports for Highway Bridge

This highway bridge replaced a narrow and dangerous truss-type bridge on State Route 123 in Ohio. Two concrete-capped bents of 10 Armco Pipe Piles on each end support the bridge floor. Armco FLEX-BEAM® Guardrail has been installed as bridge rail.

For bridge foundation support, you can depend on Armco Pipe Piles. They are supplied in straight, extra-long, exact lengths to meet your requirements. Even in functional low-cost installations, Armco Piles help make a neat, attractive bridge.

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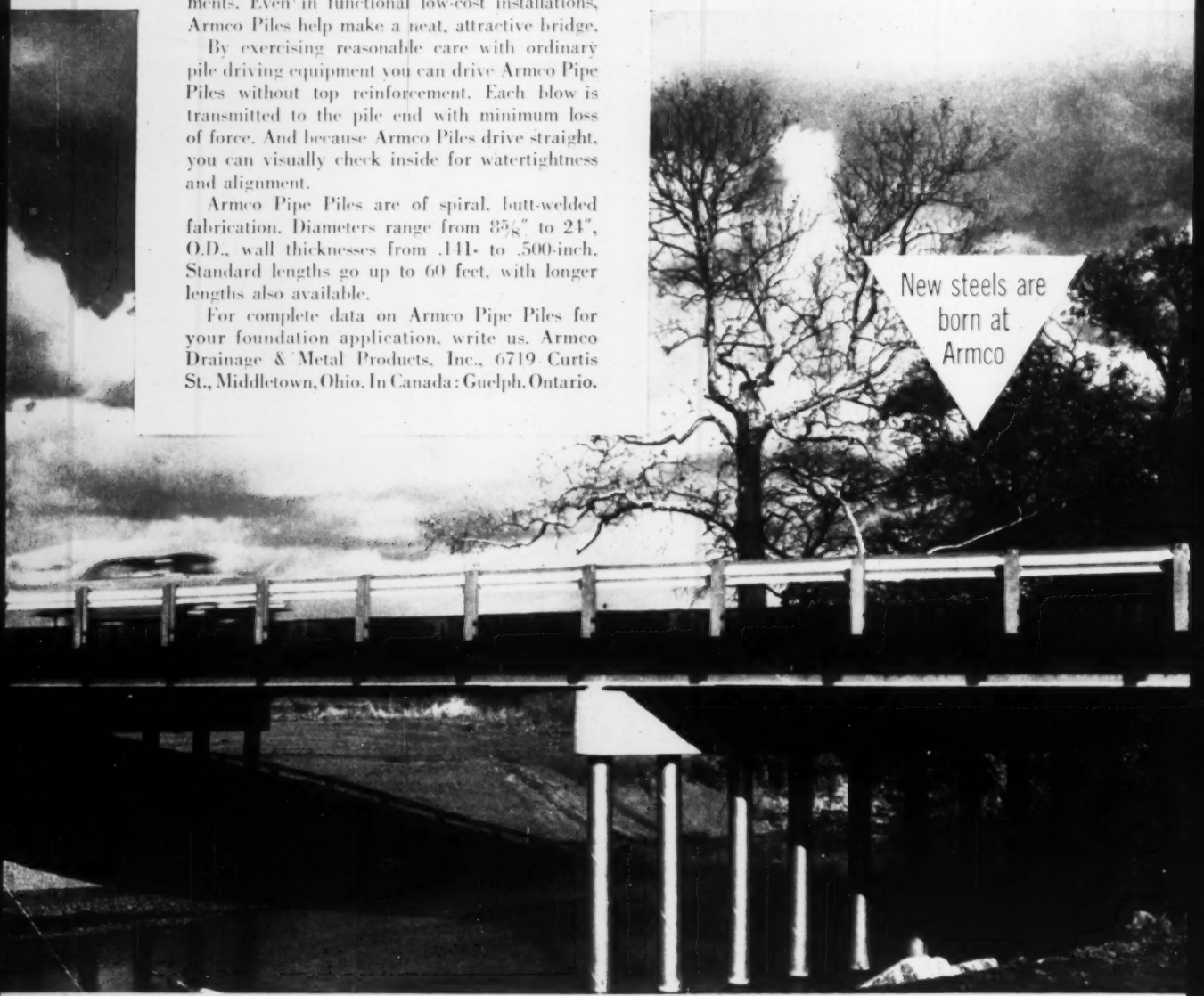
For complete data on Armco Pipe Piles for your foundation application, write us. Armco Drainage & Metal Products, Inc., 6719 Curtis St., Middletown, Ohio. In Canada: Guelph, Ontario.



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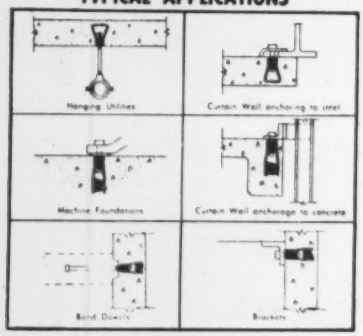

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EIGHTY-FIFTH YEAR OF PUBLICATION

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Use Dietz Visi-Flash Lights to alert the oncoming driver. Brightest, safest, most trouble-free flashers on the market. Warn: "Danger ahead."

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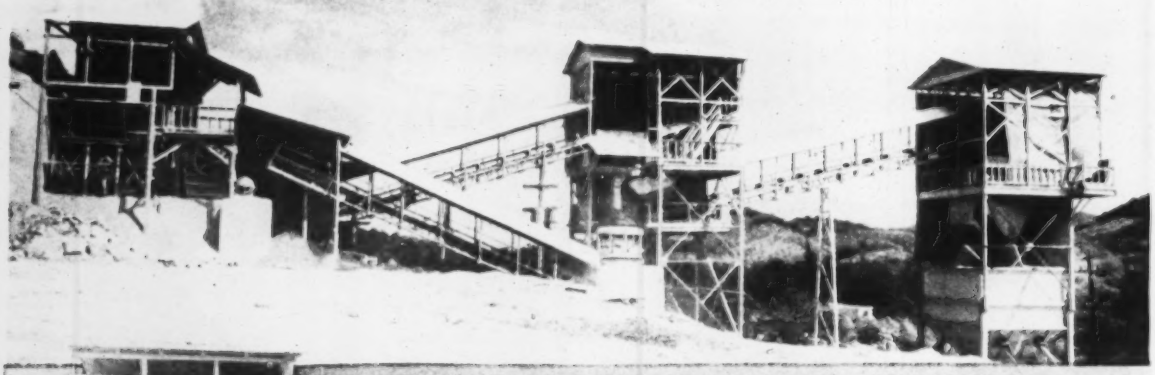
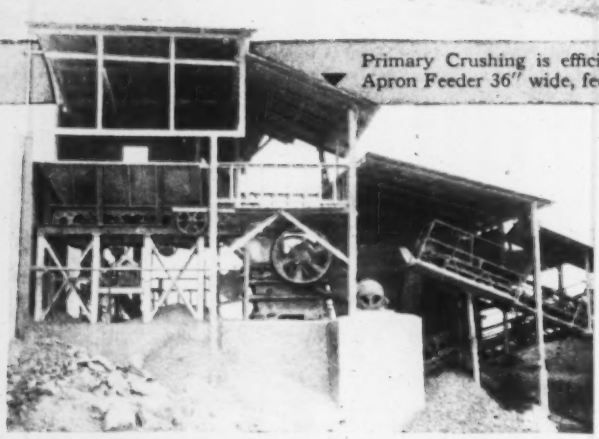
QUARRY PLANT

◀ For Secondary Crushing—Telsmith Heavy Duty 2-deck Scalping Screen and 48-S Gyrasphere Crusher.

▼ Complete plant view. (Extreme right) Telsmith 3-deck Sizing Screen over bins with 4 Telsmith Bin Gates.



▼ Primary Crushing is efficiently handled by Telsmith Heavy Duty Apron Feeder 36″ wide, feeding Telsmith 25 x 36 Jaw Crusher.



Close to San Juan, Puerto Rico, this most modern, flexible Telsmith-designed plant is crushing $1\frac{1}{4}$ — $\frac{3}{16}$″ stone for building construction. Present production, 50 cu. meters hourly, will increase with improving quarry facilities. The plant's Telsmith equipment—36″ x 12′ Heavy Duty Apron Feeder, 25 x 36 Jaw Crusher, 5′ x 12′ Heavy Duty 2-deck Scalper Screen, 48-S Gyrasphere Crusher, 5′ x 14′ Vibro-King 3-deck Screen, four 12 x 18 Siquad bin gates—was supplied by General Equipment Corp., San Juan, Telsmith Distributor for Puerto Rico. Send for Bulletin 266.

Q-38-859

SMITH ENGINEERING WORKS

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For example: Traction Express tires average 75,000 miles of service where previous makes gave considerably less; Tractor Grader tires are being retreaded as many as 4 times; on the new Rock Service Tubeless tires above, the company estimates retreads will save them 30% over other makes.

The new B.F.Goodrich Rock Service tire has an enormous, double-chevron tread that defies rock cuts and bruises, grips the ground for full traction in forward or reverse. Under the tread is the B.F.Goodrich FLEX-RITE NYLON cord body that withstands double the impact of ordinary cord materials, resists heat blowouts and flex breaks. This is why the FLEX-RITE NYLON body outwears even the extra-thick Rock Service tread, can be retreaded over and over.

See your B.F.Goodrich Smileage dealer today and find out how you can save on tires for all types of off-the-road jobs. He's listed under Tires in the Yellow Pages of your phone book. *B.F.Goodrich Tire Co., A Division of The B.F.Goodrich Co., Akron 18, Ohio.*

Specify B.F.Goodrich Tubeless or tube-type tires when ordering new equipment

Smileage!

B.F.Goodrich *truck tires*

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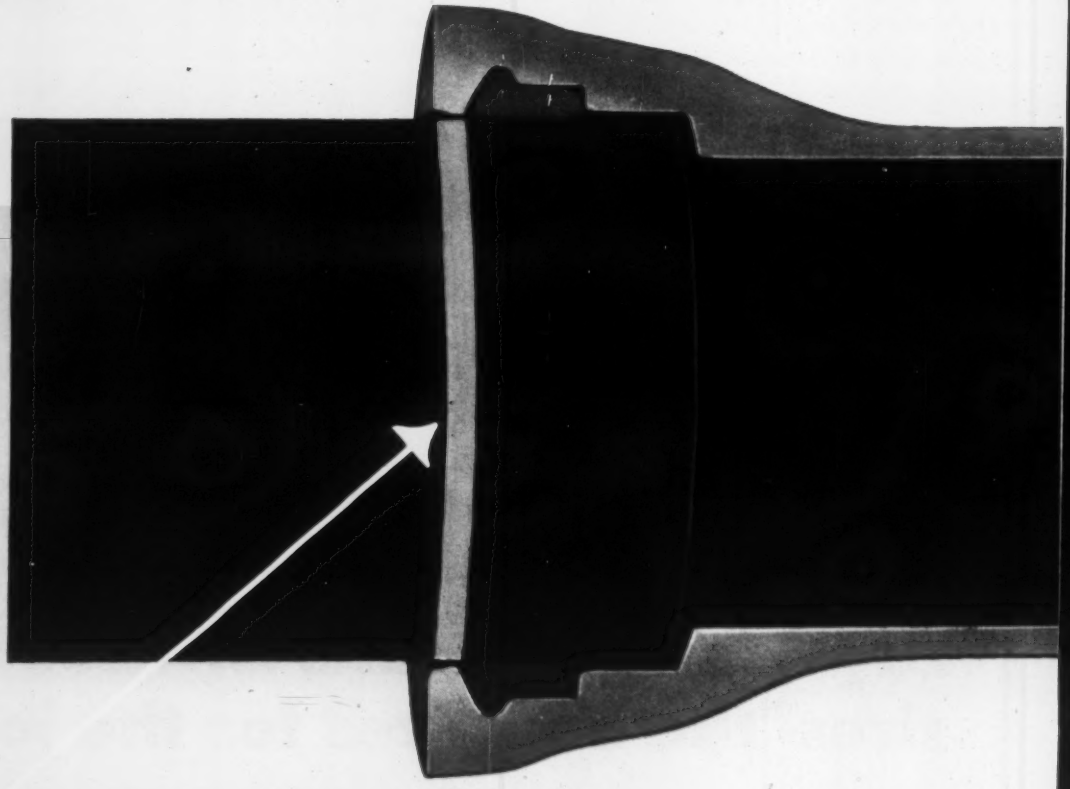
CLOW



This YELLOW STRIPE on

CLOW Bell-Tite Joint Pipe

is your guide line to a quick bottle-tight seal

This circular yellow stripe is painted on the plain end of each length of CLOW Bell-Tite Joint pipe. It serves as a guide in making up the joint, to provide a fast, positive visual check that the the joint is completely and correctly assembled.

The edge of the stripe farthest from the plain end measures approximately one-half inch less than the depth of the Bell-Tite bell. Thus, in assembly, the joint is made pressure-tight when the stripe is no longer visible.

The seal is achieved by the use of a single, thick-section, high durometer molded rubber gasket. When compressed in position by the entering plain end of pipe, it forms a pressure-tight seal with generous sealing area which permits ample deflection to meet casual curves or grades.

CAST IRON

PIPE

with patented* Bell-Tite Joint

*Patent No. 2898131

MORE MAIN FOR YOUR MONEY

Costs less to buy

Only one accessory is required to make a pressure-tight seal with a CLOW Bell-Tite Joint —a single, molded rubber gasket. There are no extras—no bolts, no nuts, no followers, no couplings. This economical pipe is strong, tough, uniform and durable for long-life underground service. It is available in any specified thickness or weight class in accordance with ASA, AWWA, or Federal specifications from 3″ to 24″.

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Assembly is quick, simple and easy. Pressure-tight joint is formed instantly by merely inserting the rubber gasket and pushing the pipe home to its seat. It can be installed in a wet trench and even under water. Rate of installation usually is limited only by speed of excavation. It permits ample deflection for casual curves or grades. Bell-Tite Joint pipe is Underwriters' Listed for working pressures up to 350 psi. Available in diameters up to 24″.

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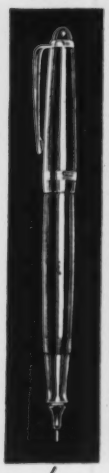
Two Koh-I-Noor products designed to work together for greater convenience. Lead holder's non-slip clutch takes all 17 degrees of Koh-I-Noor lead. Ejectomatic Dispenser feeds lead to holder without need to touch it.



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Reader Comment

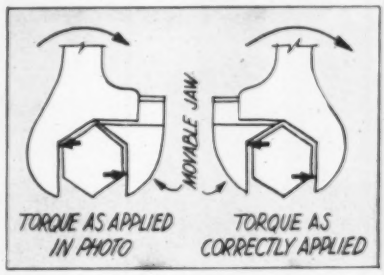
Meanwhile, Back on the Wrench

A reader says the wrench was too small, used backwards

SIR—In regards to the cover photo (ENR Aug. 20), it appears to me that the industrious gentleman is not only using a wrench too small for the job, but he is also using it backwards!

The brief sketch (right) should explain the latter part of the above statement.

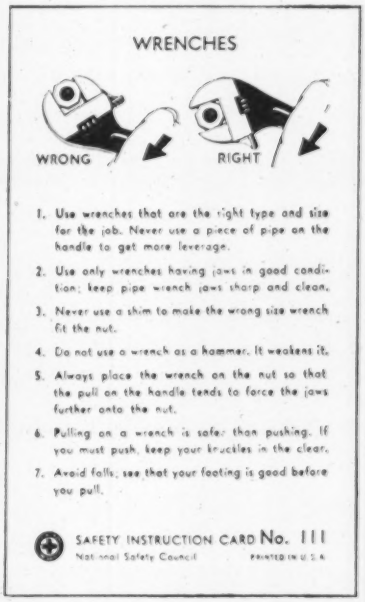
JOHN L. CERUTTI, P. E.
Public Works Dept.
U. S. Naval Station
Mayport, Fla.



. . . But the wrench did the job, and the right way.

Editor's Note: Mr. Cerutti is partly correct—the wrench is too small for the job, and the pipe extension on the handle proves it. (Though curious ENR editors checked on the fate of this overworked tool and found that it did not break in spite of the treatment it received.)

As for the wrench being used backwards—*not so* according to such authorities as the National Safety Council (see right); Mr. Locke L. Mouton, Chief, Technical Liaison Branch, Corps of Engineers, Albuquerque District; and representatives of Kraeuter & Co., Inc., tool manufacturers. All agree that while an adjustable wrench can be used both ways, its "clutch" (i.e. grip) is far superior when the pull is in the direction of the movable side. Furthermore, the wrench is stronger when used this way since the pressures on the movable jaw force it against the solid back of the tool. When used as Mr. Cerutti suggests, the movable jaw is pulled away from the body of the wrench and will eventually spread the sides of the screw slot and permit the movable jaw to break or fall out.



WRENCHES

WRONG RIGHT

1. Use wrenches that are the right type and size for the job. Never use a piece of pipe on the handle to get more leverage.
2. Use only wrenches having jaws in good condition; keep pipe wrench jaws sharp and clean.
3. Never use a shim to make the wrong size wrench fit the nut.
4. Do not use a wrench as a hammer. It weakens it.
5. Always place the wrench on the nut so that the pull on the handle tends to force the jaws further onto the nut.
6. Pulling on a wrench is safer than pushing. If you must push, keep your knuckles in the clear.
7. Avoid falls; see that your footing is good before you pull.

SAFETY INSTRUCTION CARD No. 111
National Safety Council PRINTED IN U.S.A.

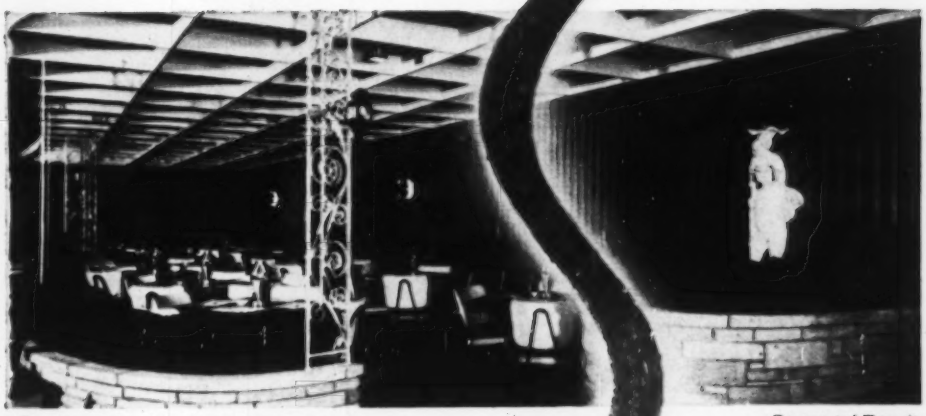
Earth Dams and Earthquakes

SIR—You are to be commended for your editorial on Hebgen Dam (ENR Aug. 27, p. 92) pointing out the ability of an earth dam on this site to withstand an earthquake of major intensity.

However, the statement that the earth dam designer is relatively unable to consider "calculable means of strengthening" his earth dams against earthquake action should be revised.

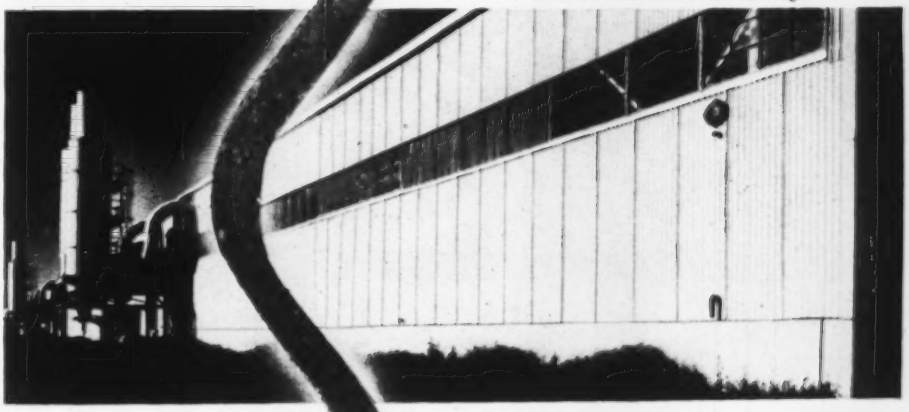
The fact is that if the earth dam designer is convinced that hypothetical horizontal earthquake forces, such as one-tenth or two-tenths gravity, should be provided against, he has as many tools in his stability analysis procedures as does the concrete dam designer. His best procedure is emphatically *not* to employ such over-simplified, rule of thumb, and possibly even dangerous

Engineering News-Record welcomes expression of opinions from its readers. Comment should be as brief as possible and pertinent to subjects of current construction importance. Letters should be addressed Editor, Engineering News-Record, 330 W. 42nd St., New York 36, N. Y.



Corrugated Transite sheets add eye appeal to lounges and terraces.

Corrugated Transite sheets provide rugged service for industrial and commercial buildings.



CORRUGATED *asbestos* TRANSITE®

...for eye appeal—

...for rugged service

Johns-Manville Corrugated Transite sheets wear like stone. They are made of two virtually indestructible materials—asbestos and cement. Corrugated Transite can't burn, can't rot, can't rust—requires practically no maintenance.

Use it inside or outside—paint it a color or take advantage of its innate stone-gray attractiveness—use it with other materials for contrast or variation—use it alone to emphasize the light and shadow of the corrugations.

Sheets of Corrugated Transite are 42″ wide (10 corrugations) in lengths up to 12′—cover big areas quickly with minimum framing. For full information on this versatile material, send for the free 32-page brochure, "Corrugated Asbestos Transite." Write to Johns-Manville, Box 158, New York 16, N. Y. In Canada, Port Credit, Ont.

JOHNS-MANVILLE

JOHNS MANVILLE JM PRODUCTS

It's salt spreading time on the Calumet Skyway— this pipe bears the brunt of the drainage

4-D Wrought Iron Pipe—nearly 400 tons of it—drain the structures of the 7½ mile elevated toll bridge

Winter forecasts heavy salting on the new Calumet Skyway in Chicago.

Salting eliminates icy highway hazards for hurrying motorists. But salt-laden slush and run-off water in highway drainage systems can be extremely corrosive. So the choice here, according to consulting engineers on the job, was 4-D Wrought Iron Pipe. Reason why: the unique ability of 4-D to produce a corrosion-blocking oxide coating which actually protects the pipe against corrosive penetration.

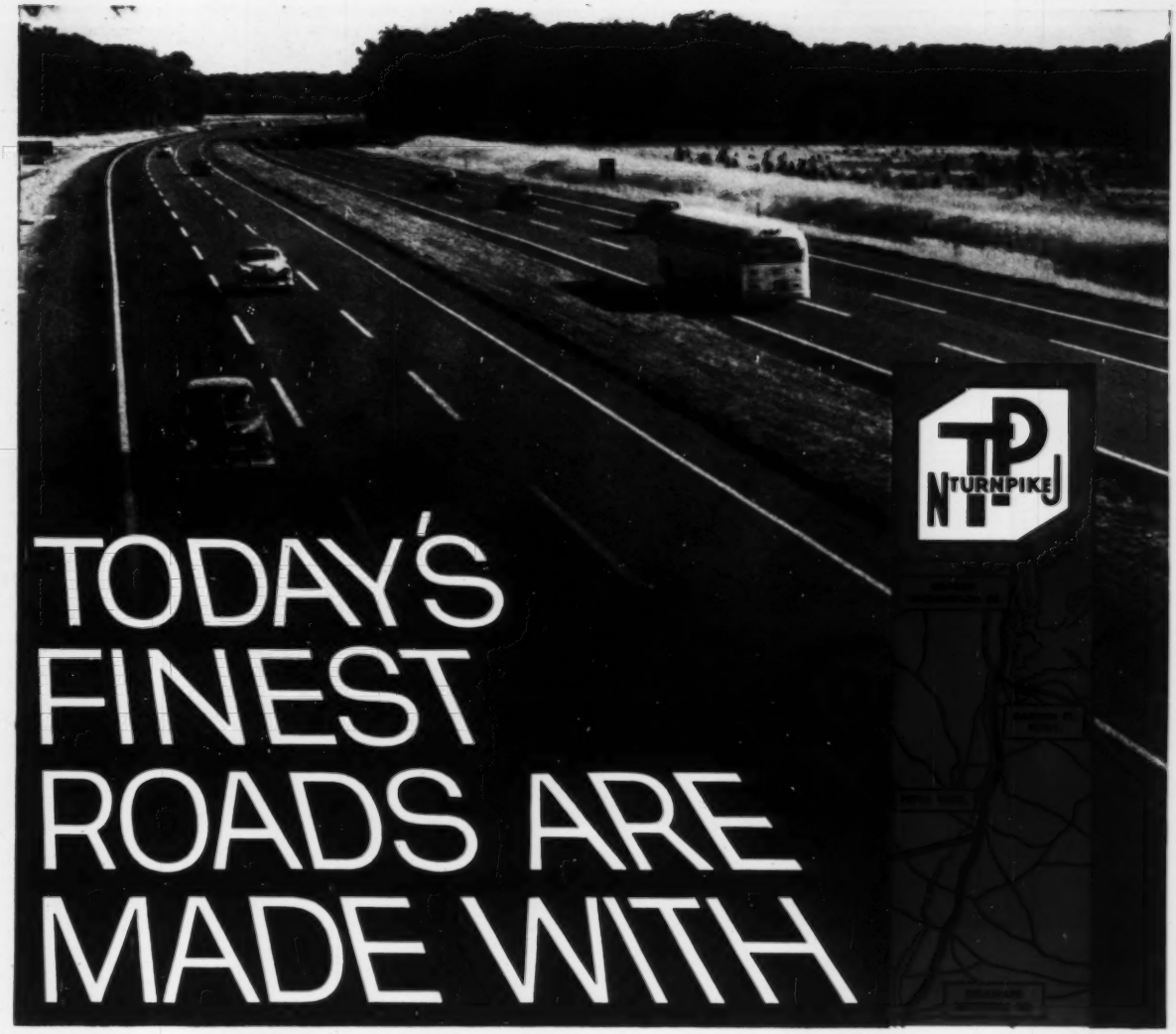
In addition to corrosive run-off water on the *inside* of the pipe, 4-D Wrought Iron also has to withstand the salt spray kicked up and eddied about on the *outside* by whizzing cars, trucks and buses.

4-D Wrought Iron plate was fabricated into 14", 16" and 18" O.D. pipe for this all-weather installation. Consider the possibilities of 4-D Wrought Iron whenever the plans call for uninterrupted service. A. M. Myers Company, Clark Building, Pittsburgh 22, Pennsylvania.

BYERS 4-D WROUGHT IRON

TUBULAR AND FLAT ROLLED PRODUCTS

Corrosion costs you more than Wrought Iron



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Produced by Esso Standard Oil Company

Asphalt furnished by Esso was used in the construction of the New Jersey Turnpike and saved more than $46,000 per mile over slab type pavement – and every year will bring added savings through lower maintenance costs. Consider these advantages in your road building plans:

Unsurpassed quality – Asphalt produced by Esso is specially refined to give pavements integral strength and flexibility – with maximum strength to resist heavy axle loads and extremes in temperature.

Faster construction time – Roads paved in ribbons are completed faster... do not require curing time, forms, and curing equipment.

Less capital tied up – Contractors can meet faster construction schedules and obtain contract payments more quickly.

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Any road, street or turnpike, paved with Asphalt costs less to build... costs less to maintain... gives a smoother, quieter ride... gives more miles, safety and comfort for the taxpayer's dollar over slab type pavements. For more information or technical assistance, write: Asphalt Products, Esso Standard Oil Company, 15 West 51st St., New York 19, N.Y.

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In Industry after Industry..."ESSO RESEARCH works wonders with oil"

This $5,000,000 fire might have been prevented with a **steel pipe** automatic sprinkler system

There wasn't much left when this $5,000,000 industrial property in New England burned to the ground. Yet how different the ending could have been if a *steel pipe* fire sprinkler system had been installed and the fire checked at its inception.

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measures, as making "his section amply large to resist the hydrostatic head, amply long to keep the foundation stresses low and the hydraulic gradient from intersecting the downstream face, etc." Instead, the most modern engineering design against earthquake action is primarily concerned with such features as the provision of the type of internal zoning and drainage that would be most likely to encourage the rapid and safe healing of any earthquake-caused cracks, together with the provision of the proper degrees of plasticity and densification of the several zones of the dam in such manner as to minimize and even-out potential cracking from earthquake action.

T. M. LEPS
Southern California Edison Co.
Los Angeles, Calif.

▶ In J. L. Sherard's article on the earthquake damage to Hebgen Dam (ENR Sept. 10, p. 27) picture number three would have been much more interesting if you had printed it right side up.

J. F. BRENNAN
New York, N. Y.

Corrected Bridge Credits

Sir—In announcing the awards for the most beautiful steel bridges of 1958 (ENR Oct. 1, p. 26) the American Institute of Steel Construction erroneously listed the firm of Patchen, Mingledorff & Williams as the designers of the Morris Memorial Bridge. The actual design was executed under a contract with the Savannah District Corps of Engineers, U. S. Army, by the firm of Patchen & Zimmerman, engineers of Atlanta, Ga.

The institute is sincerely sorry for the error for which it must admit full responsibility.

T. R. HIGGINS
Director of Engineering and Research
American Institute of Steel Construction, Inc.
New York, N. Y.

For Your Calendar . . .

Prestressed Concrete Institute annual meeting, Deauville Hotel, Miami Beach, Fla., Nov. 1-7. Write: Martin P. Korn, PCI, 425 N. E. Fifth St., Boca Raton, Fla.

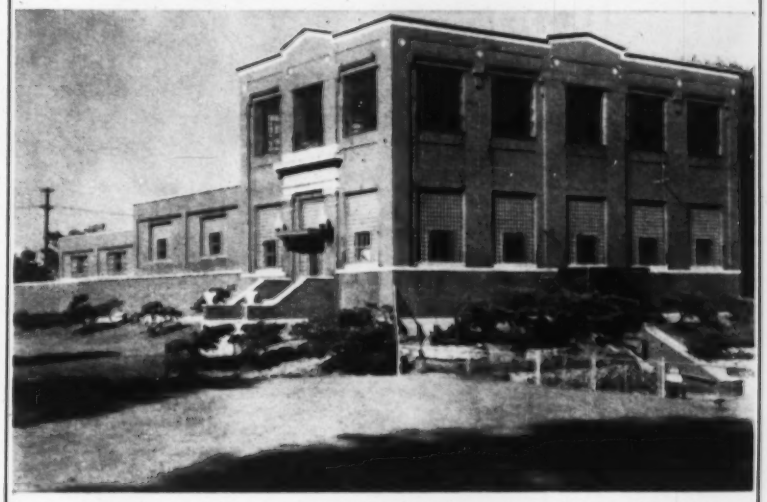
Air Conditioning and Refrigeration Institute Exposition, Atlantic City, N. J., Nov. 2-5. Write: Air Conditioning and Refrigeration Industry, Atlantic City, N. J.

American Society for Metals' National Exposition and Congress, International Amphitheatre, Chicago, Ill., Nov. 2-6. Write: Chester L. Wells, Exposition Manager, American Society for Metals, 7301 Euclid Ave., Cleveland 3, Ohio.

American Concrete Pressure Pipe Association, annual meeting, The Fairmont, San Francisco, Calif., Nov. 5-6. Write: American Concrete Pipe Assn., 228 N. LaSalle St., Chicago 1, Ill.

Building Products Exposition of the National Retail Lumber Dealers Association, Public Auditorium, Cleveland, Ohio, Nov. 14. Write: Oertell Collins, General Chairman, NRLDA, 302 Ring Building, 18th and M Streets, N. W., Washington 6, D. C.

Use Northern Gravel for Rapid Sand Filter



C. F. Bufe, Superintendent, reports that the filtering material used in the Wyandotte, Michigan water plant was received as ordered from the Northern Gravel Company and has done a very satisfactory job for their city.

Filter Sand Specifications

are fully laid out. The Effective Sizes and Uniformity coefficients used by Consulting Engineers and also recommended by the American Water Works Association are the result of long specifications. Filter sand can be furnished with any effective years of research and experience.

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Filter Gravel

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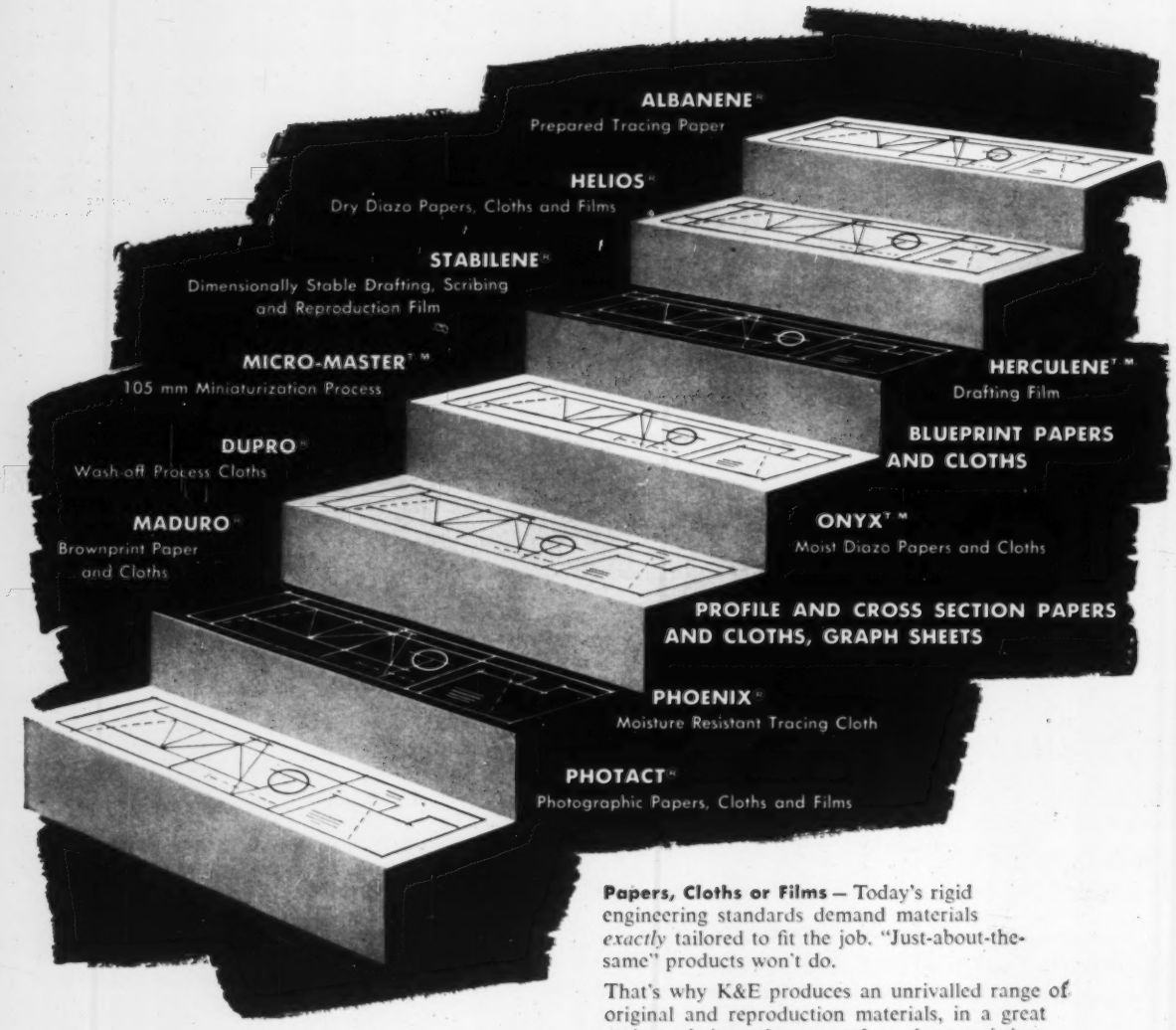

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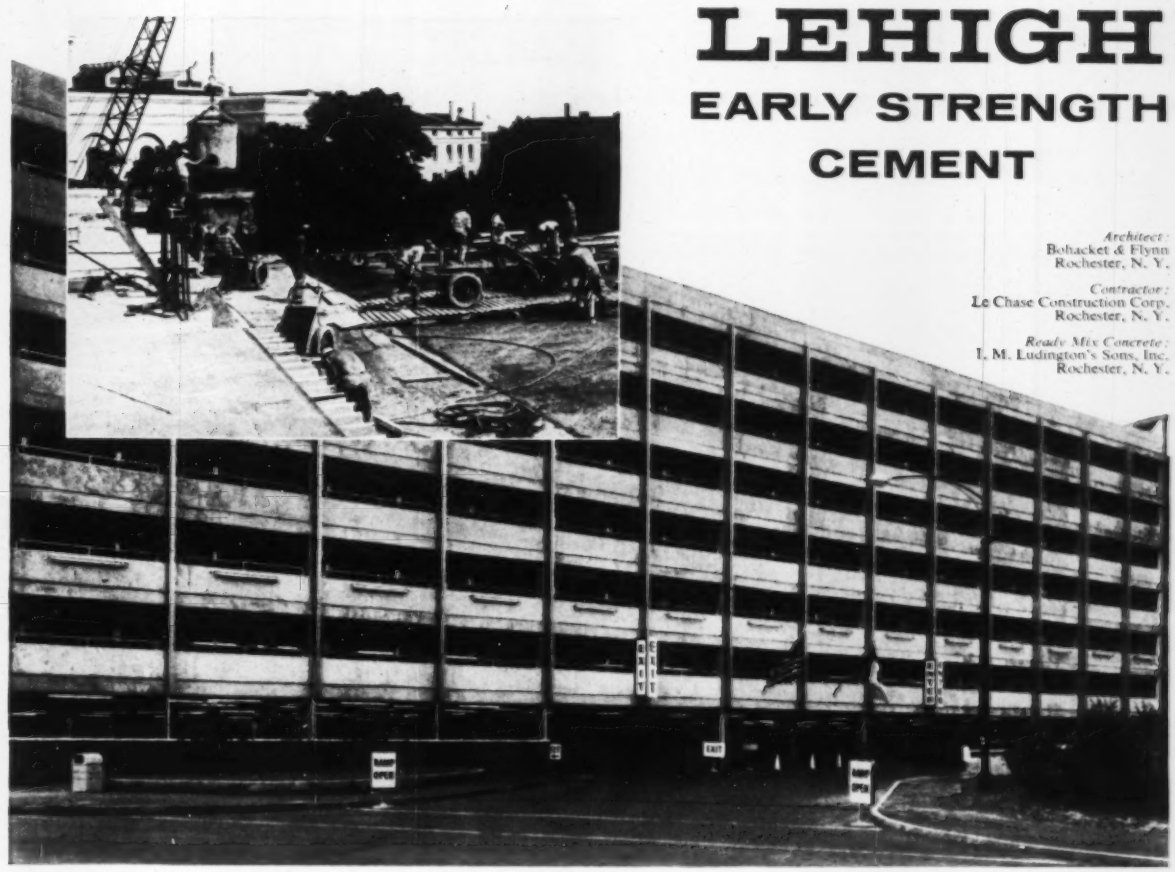


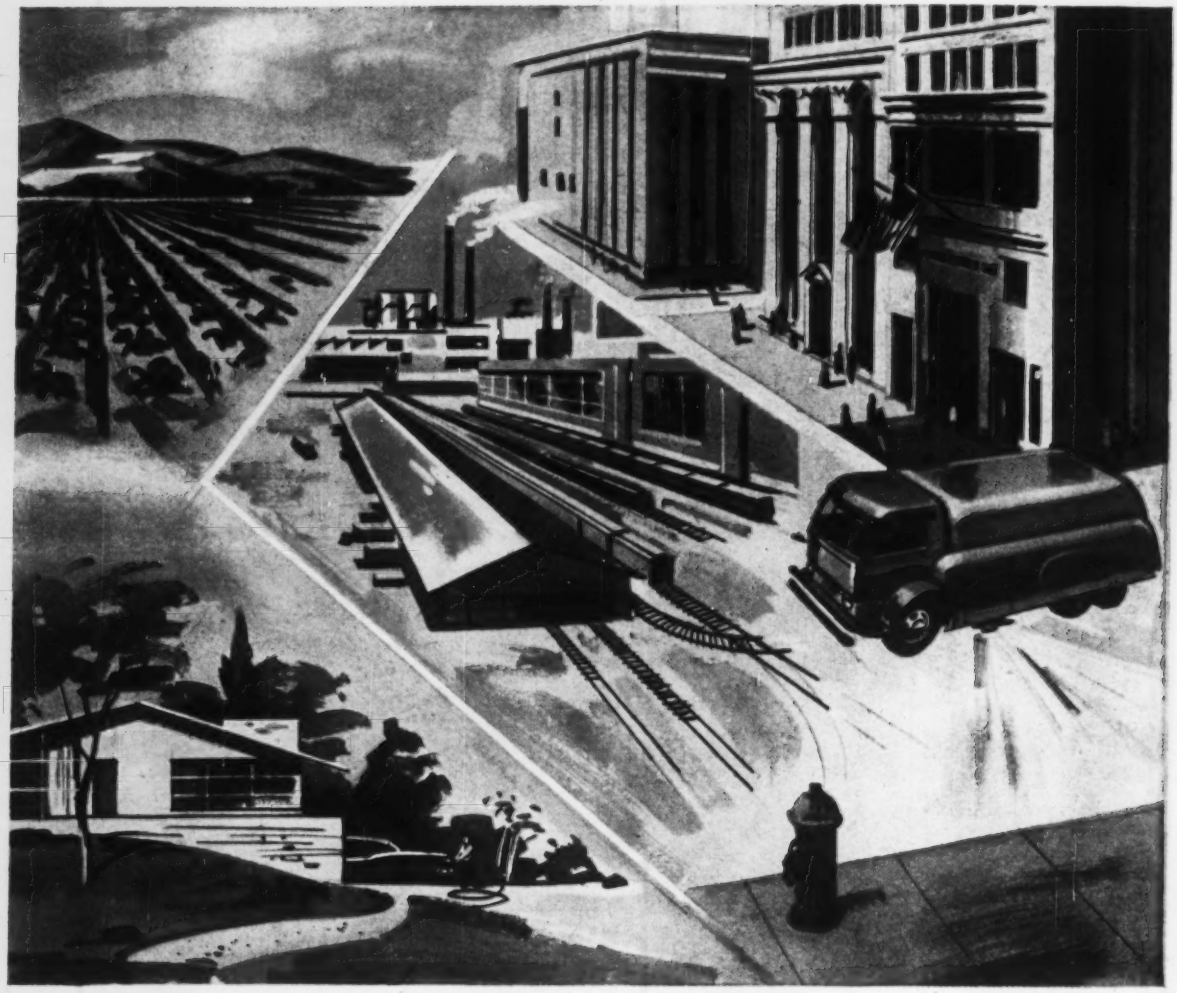
Eight parking levels contain 551 metered spaces. Motorists park their own cars, taking advantage of such modern features as automatic coin changers, passenger elevators and a counting system which tells them where spaces are available.

• *The Clinton Avenue Parking Ramp* is another structure resulting from the forward thinking of the City of Rochester, N. Y. Because of the ramp, 551 more cars have been removed from the curbs of busy downtown streets.

For the second time in 26 months (the city's 523 car Mortimer Street Parking Ramp was completed in March '58) Lehigh Early Strength Cement was chosen for a big Rochester parking facility. The tight schedule called for placement of concrete during most of the Fall and Winter months. Work progressed so well that six floors were opened temporarily during the Christmas rush. After the holidays, concrete pouring was completed. The ramp has been producing full income since April.

This is another example of how Lehigh Early Strength Cement saves time and money in modern concrete construction. Lehigh Portland Cement Company, Allentown, Pa.

LEHIGH CEMENTS



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ENGINEERING NEWS-RECORD

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THE CONSTRUCTION WEEK

WAREHOUSE STEEL DISAPPEARING—Supplies of steel in the nation's warehouses are now at the critical stage. Acute shortages of a wide range of products is reported by the American Steel Warehouse Association. Chicago, Detroit, Cleveland report inventories of flat rolled products are "virtually wiped out." Severe shortages of structurals are also reported.

HIDROELECTRICO JOB, ANYONE?—An Argentine agency planning a $300-million hydro project reportedly invites registration of interested foreign engineering consultants. The project includes a 70,000-kw power station and a $160-million dam at Salto Grande on the Uruguay River, along the Argentina-Uruguay border. The agency: Comision Tecnica Mixta de Salto Grande, Av. Diaz Velez 3902, Buenos Aires.

DEODORIZING SHUTDOWN—Allegheny County (Pittsburgh) Sanitary Authority has changed its mind about which to pollute—air or water (ENR Oct. 15, p. 19). The agency is shutting down the sludge incinerators in its brand new Woods Run Sewage Treatment Plant to track down an odor. During the six-week shutdown, treatment will be limited to screening, grit removal, preaeration and chlorination.

DODGERS' HOME SAFE—The U.S. Supreme Court this week eliminated the last barrier to full-scale construction of a new stadium for the Los Angeles Dodgers. The court dismissed three appeals attaching plans by the city to turn over the land in Chavez Ravine. Limited excavation has already begun (ENR Sept. 24, p. 30).

NO LIFE YET IN HIGHWAY AWARDS—Contractors' new highway business for the year is now 20% under last year's record. Although the slide has halted, contract award volume is bumping along on a low $35-million to $40-million weekly average. Many states have resumed bid calls—but the comeback won't have much zip until early next year (see p. 23).

STATE SLOWS ROAD AWARDS—Because of the new controls on federal road funds, the Oklahoma State Highway Department has canceled a $4.4-million letting scheduled for next week. There will be no more openings in Oklahoma until the second quarter of 1960.

ENGINEER–AGENT OR CONTRACTOR?—A federal district court has ruled that Singstad & Baillie, design engineers on the Baltimore Harbor Tunnel project, is subject to the overtime provisions of the Fair Labor Standards Act. The firm contended it was an agent of the Maryland State Roads Commission and entitled to the state's exemption. But the court said it is an independent contractor.

7 TO 16 FEET VARIANCE IN DEPTH, YET...

a perfect curve on a tough trench job with lightweight steel piling

This job called for shoring trenches on 40-foot diameters; since each one ranged in depth from 7 to 16 feet, aligning the sections accurately posed a problem. Foster Lightweight Steel-Sheet Piling, with its exclusive "non-jam" interlock, solved the problem by eliminating the need to thread one section the entire length of the adjacent section.

The Foster steel sheeting, light enough to be easily handled, was set on line manually against a special platform guide, then driven two feet to stand by itself. With all the sheeting in place the platform was removed and the piling driven to required depth. Every piece drove straight and true, even though some was driven 18 feet into hard bottom.

Foster Lightweight Piling, pound-for-pound stronger than any other lightweight piling, costs less to buy, less to use. Economy and versatility make it ideal for many light-load excavations including cofferdams, trenches, shore and pier protection, docks, and other piling applications.

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WASHINGTON OBSERVER

- **Government checking steel supplies**
- **Experts ponder ways to stop new strike**

● **Government officials are still worried about the effect of steel shortages on construction.** Two spot surveys have already been made to try and measure the impact. More are planned.

Most recent check was made by a professional society at the request of Maj. Gen. John S. Bragdon, President Eisenhower's special assistant for construction affairs. Some 200 engineers were asked to report on delays being caused by the steel strike. General Bragdon turned results over to Raymond J. Saulnier, chairman of the President's Council of Economic Advisors.

Officials did not disclose results, but one White House aide said the impact of steel shortages was "already acute and getting worse."

An earlier survey, made by the Census Bureau, showed a 4% drop in the Census Bureau's estimates of construction activity for September (see p. 83).

Officials say the decline was due wholly to the steel pinch. The bureau asked contractors and builders for reports on work delays, which are showing up in every major kind of construction.

Meanwhile, equipment manufacturers are using a survey to enable members to swap surplus items in their steel inventories. The Construction Equipment Manufacturers Association is circulating a list of each member's steel stock. Two manufacturers—Caterpillar Tractor and International-Harvester—have already curtailed operations. Allis-Chalmers reports it can keep production lines going until late November.

—

● **This week's injunction is something no one really wanted**—not the companies, not the union, not the government. Only after the fact-finding board threw in the towel did President Eisenhower reluctantly file his request with a federal court.

Officials seem agreed that the strike is likely to start again at the end of the 80-day period, and with even more bitterness.

As a result experts are looking for new ways to avoid any such bargaining impasse. Certainly, all hands agree that the Taft-Hartley law doesn't have what it takes.

Here are some of the proposals you'll see being discussed during the months ahead:

Pre-strike, pre-emergency, pre-Taft-Hartley fact-finding is one idea. Note that President Eisenhower's fact-finders had to take time to find out what the issues were—after a nation-wide strike of three months.

Allow a Taft-Hartley fact-finding board to recommend a settlement. Public opinion might force both sides to accept the recommended settlement or some variation of it.

Make arbitration mandatory—something Congress will look into for sure.

Apply the antitrust laws to unions, the idea being to restrict bargaining to single plants or single companies.

CLEAN WINDOWS *the Fast, Efficient*
CLEVELAND TRAMRAIL WAY

MODERN buildings not only have more and larger windows than ever before, but because of air-conditioning, they are often non-opening. This necessitates providing some means for reaching them when washing the outsides, and sometimes for the insides also.

Even where provision is made for reaching the outside of a window from the inside, this usually is not desirable when a building is air-conditioned. Open windows quickly unbalance an air-conditioning system, in warm weather and, of course, are undesirable in cold weather.

Cleveland Tramrail Window Washing Equipment offers a solution to the problem. It enables a man to reach every window quickly and wash them with complete safety. In addition, it facilitates other outside building maintenance such as pointing up, painting, minor repairs. The equipment is available for hand or electric operation.

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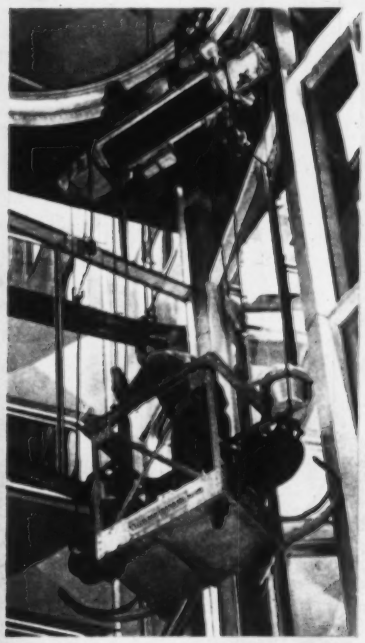
This modern glass-walled office lobby in the super-modern office building of Aluminum Company of America in downtown Pittsburgh is 4½ stories high. Cleveland Tramrail track circles the lobby both outside and inside. A motor-driven carrier and electric hoist is provided for each track loop. When a cage is attached to a carrier, a window washer can position himself at any part of a window by operating the simple hoist and travel controls.



Washing windows on the inside of the lobby. The same cage is used both outside and inside.

CLEVELAND TRAMRAIL DIVISION • THE CLEVELAND CRANE & ENGINEERING CO. • 3116 E. 290 ST. • WICKLIFFE, OHIO

Crowded rooms and spirited discussions abound at AASHO convention as . . .

State Men Rue Road Reverses

Extensive cutbacks, intensive investigations, stringent controls—those were the "troublesome three" that the nation's highway officials mulled over in Boston last week.

The American Association of State Highway Officials convened its 45th annual meeting only days after Congress and the Administration had slapped the fetters on the federal-aid highway program.

Although they had reeled under the blows, the highway men were quick to come back last week. There was some anger, little fear, but lots of anguish and irritation. By the end of the week-long meeting there was no doubt how they felt about recent developments in Washington. The consensus:

- Cutbacks in federal money could mean a stretchout of the Interstate Program without a change in law.
- Investigations may be the start of a drive to water down what's left.
- Contract controls are hindrances, unnecessary intrusions into state prerogatives.

Sustained applause won by a fiery speech at the opening session indicated the mood of the audience. The speaker was Rep. Gordon H. Scherer (R., Ohio), ranking minority member of the House Subcommittee on Roads, which will investigate the program.

Representative Scherer charged that "the Bureau of Public Roads and the state highway departments have been made the chief whipping boys."

Mr. Scherer also charged that the special White House committee (the Bragdon group) investigating the highway program "will try to find justification for eliminating the Interstate System within industrial areas but, if it cannot do this, then it will definitely recommend substantial curtailment of this part of the highway program."

But the delegates indicated that any attempt to cut city roads out of the 90-10 money would meet with strong opposition. Many found the idea incredulous.

The traffic jams and the taxpayers are in the cities, and that's where a good share of the new roads should go, they said. "Urban facilities are necessary for an integrated Interstate Highway System. And to ask cities to build these roads alone is both unrealistic and contrary to the 1956 Highway Act," said Harold L. Plummer, chairman of the Wisconsin State Highway Commission.

"The cries are now being heard from the rural groups, but if the cutdown were to get close to reality then the screams would come from the urban areas," said Richard A. Haber, chief engineer of the Delaware State Highway Department.

"What do you do with the traffic once you get it to the cities?" That was an acid comment often heard.

At least one delegate, Ernest J. Ketcham, chairman of the Washington

"HATCHET MEN" are on the investigating committee, charges Rep. Scherer.

"HARD-HITTING, but fair" is the way Rep. Blatnik describes it.

State Department of Highways, called the Bragdon investigation a good thing. It "may force cities to give another big look at rapid transit as the answer to urban transportation," he said.

Delegates gave short shrift to talk of changing the 90-10 ratio. For one thing, they said, states are having enough trouble getting together their 10% now. They point out that lots of thought went into arriving at the present ratio.

• **Cutback in money**—The reduction in federal money is slowing down and will continue to slow down the Interstate Highway Program. And it could turn into a stretchout unless the reduction is corrected soon.

That was the consensus, although some states are having so much trouble getting their 10% that the cutbacks aren't affecting them much at this time.

The cutbacks are "a drastic thing, especially in the areas of long-range planning and acquisition of right-of-way," says Elmo R. Morgan, Utah's Director of Highways.

New York State's J. Burch McMorran, Superintendent of the Department of Public Works, sees it as a slowdown and "hopes it's a temporary thing."

States that use general funds for their roadbuilding, such as Delaware, will now have to report back to state legislatures. And the legislatures could ask for the return of the unmatched state money or insist that it be used for 100% state-financed roads.

Wisconsin, which is getting $8 million less for Interstate, "will have to cut back—and will have to reschedule," Mr. Plummer stated. And work once done will have to be redone.

Montana's State Highway Engineer, Fred Quinnell, Jr., said the cutback "won't hurt us much because of shortage of state funds." The same is true of other states having trouble raising their end of the cost.

But in Washington State, re-evaluation of projects has begun. And Mr. Ketcham sees "stretchout to beat hell."

• **Contract controls**—The system for controlling state spending to match money coming into the Trust Fund is now called "reimbursement planning." But by any name the states don't like it, although they are quick to absolve BPR of blame.

"This type of control is contrary to the relationship that has existed between the states and federal government since 1916," said David H. Stevens, new AASHO president and chairman of the Maine State Highway Commission. "We do, however, recognize it was the necessary thing for BPR to do at this time," he added.

Some highway men are worried that contract controls may be the start of too much federal interference in the states' highway plans. Some say the program will be slowed and unnecessarily complicated.

It has "completely upset planning and letting schedules in Delaware," said Mr. Haber. But he does give BPR credit for picking up the pieces left by "Congress' repudiation of its responsibilities."

Some states have already spent their first quarter allotment and more. Now they will have to wait years for reimbursement and "sit on their hands until the new quarter comes in."

The state officials resent the implication that the big federal expenditures give Washington the right to control as it sees fit. In the long run, they say, the capital expenditures will be replaced by the costs of running and maintaining the roads, which the states will have to carry alone.

"Successful operation of the Trust Fund was doomed from the very outset," Representative Scherer declared. Original version of the 1956 Act "contemplated that in the first years . . . expenditures would exceed receipts while in later years receipts would exceed disbursements." The difference in the early years would have been made up by repayable advances from the Treasury. But the addition of the Byrd Amendment (pay-as-you-go) changed all this.

• **The investigations** – Generally, the highway officials are not upset by the investigations of the highway program.

They are, however, irked by the tenor of the fanfare preceding them. They feel that some vague conclusions have been reached before the facts have been gathered.

The minimum needs of the Defense Department do not strike them as valid criteria for the size of roads. "So what if they need only two lanes to move a missile, how far will it get on a congested road?"

And they don't like the two-way game of lowering costs by building fewer lanes, then raising costs with higher bridges.

The impact of the new bridge clearance requirements—an increase from 14 ft to 17 ft—will be great. It's not just a matter of raising abutments, but also changing the approach pavement.

And it will slow down work. For example, "Where bridges are concerned, letting will come to a standstill in Delaware," says Mr. Haber.

Representative Scherer says, "Irreparable harm can be done to a really fine highway program by ballooning up and unduly publicizing the mistakes and deficiencies and failing to point out how few they are . . ."

Representative Scherer ranged far and wide in his lambasting speech. He charged that "hatchet men" were included in the House subcommittee that will investigate the road program.

Next day, Rep. John A. Blatnik (D., Minn.), chairman of the House subcommittee, although not listed on the program, showed up at the beginning of one of the technical sessions.

He said the investigations will be "hard-hitting, thorough, but fair. Emphasis, character and atmosphere will be positive."

He also revealed that the hearings will be held for the most part in Washington, with on-the-spot meetings if and where necessary.

When questioned later, Representative Blatnik said that among the experts to be tapped for advice and opinion, there may be an engineering consultant. But he "will have to be one who won't have to depend upon the investigated areas for his livelihood."

The committee could be in force from two to four years or longer—until "the whole highway program operation is well established."

Outlook for Federal-Aid Roadbuilding

The potential of federal-aid highway and bridge construction awards in fiscal 1960 is a little more than $2.8 billion—based on these assumptions:

- The states will obligate all of the federal aid scheduled by the Bureau of Public Roads for fiscal 1960, and split it the same as the BPR schedule: Two-thirds to Interstate projects and one-third to ABC jobs.
- Construction will take 74% of the total (as it did in fiscal '58 and '59) with the remainder going for right-of-way and engineering costs.

Precious little of this federal-aid highway work will be going to contract during the next 10 weeks. At best, the new contract controls permit states to obligate only 11% of the fiscal '60 total (slightly over $300 million) to contracts in the November-December period. Thus highway award volume will be slow in rebounding from the slump.

But contracts will perk up in the January-March quarter. One-third of the whole fiscal year's highway and bridge construction — $935 million worth—could be let in this period. A like amount could be let in the second quarter, according to BPR's obligation schedule.

Because two-thirds of fiscal 1960 obligations are scheduled for the six months beginning January, 1960, potential federal-aid highway contracts in calendar year 1960 could add up to $3.3 billion—or 10% more than the potential for calendar year 1959. But to score such a gain, each state would have to contract all available federal aid—which isn't likely.

The state highway departments will have 22% less federal-aid money to obligate in the fiscal year ending next June 30 than they did in the last fiscal year—$2.7 billion this year compared to $3.5 billion last year. However, the $3.5-billion total includes the extraordinary "D" and "L" funds—both of them recession-fighting measures.

Some states won't suffer from the cutback; they haven't the matching funds to take full advantage of even the lower figures.

But construction in such major roadbuilding states as Colorado, Connecticut, Florida, Illinois, Michigan, New York, Ohio and Texas will be jolted. The states just don't have the money to bridge the gap between last year's federal allocations and this year's. (Note: In last week's issue the highway table on p. 26 had two inaccurate column headings. Interstate apportionments were for 1961, not 1960. Obligations for Interstate-ABC roads were for 1959, not 1960.)

(For Fiscal 1960—Based on obligations scheduled for 1960.)
(in millions of dollars)

OBLIGATIONS: Sharp Drop in '60 | **APPORTIONMENTS: '61 Looks No Better**

	Obligations (Interstate Plus ABC)			Contract Award Potential*	Apportionment Interstate			Interstate Plus ABC
	FY 1959†	FY 1960	% Change	FY 1960	1959	1960	1961	1961
U. S.	3,479.0	2,700.0	−22	2,811	2,300.0	2,300.0	1,800.0	2,725.0
Ala.	69.4	52.2	−25	54	44.7	49.1	35.1	51.9
Alaska	13.2	36.0	+137	53	....	....	....	36.7
Ariz.	39.5	34.7	−12	36	25.2	34.0	24.3	33.0
Ark.	38.5	30.0	−22	33	32.0	24.7	17.7	29.7
Calif.	205.4	227.0	+11	218	125.7	252.8	181.1	227.7
Colo.	46.7	27.5	−41	32	30.0	19.3	13.8	27.3
Conn.	47.9	29.8	−38	30	21.2	30.3	21.7	29.7
Del.	8.0	10.6	+33	11	13.8	8.8	6.3	9.9
Fla.	90.1	60.1	−33	59	37.4	64.5	46.2	60.0
Ga.	78.9	62.5	−21	65	51.2	60.0	43.0	62.2
Hawaii	5.8	4.1	−29	6	....	....	....	3.9
Idaho	29.9	20.3	−32	22	22.2	17.2	12.3	20.3
Ill.	187.8	129.2	−31	132	103.7	137.6	91.4	129.0
Ind.	99.5	72.0	−28	73	53.5	71.7	51.4	71.6
Iowa	85.9	35.2	−59	41	44.8	23.6	16.9	34.6
Kan.	48.9	33.2	−32	39	39.9	22.3	15.9	32.6
Ky.	85.6	46.4	−46	48	41.2	43.7	31.3	46.1
La.	90.0	60.1	−33	58	36.3	65.7	47.1	60.1
Me.	26.8	15.4	−43	17	17.7	12.8	9.2	15.2
Md.	17.2	49.3	+186	47	26.4	56.0	40.1	49.4
Mass.	87.9	65.5	−25	63	47.0	69.3	49.6	65.3
Mich.	143.6	99.1	−31	101	79.1	97.8	70.0	100.6
Minn.	76.8	54.1	−30	58	49.6	46.9	33.6	54.9
Miss.	46.8	33.0	−29	36	34.9	27.3	19.6	33.6
Mo.	83.2	73.9	−11	76	59.6	71.0	50.8	73.5
Mont.	40.4	33.2	−18	36	31.6	28.3	20.3	33.0
Neb.	36.7	29.2	−20	33	31.6	15.3	11.0	24.3
Nev.	29.4	16.9	−43	19	23.0	13.0	9.3	17.1
N. H.	28.5	13.7	−52	14	13.8	13.7	9.8	13.9
N. J.	72.3	74.0	+ 2	72	48.2	80.5	57.7	74.0
N. M.	38.0	32.6	−14	34	26.7	29.8	21.3	32.6
N. Y.	216.3	143.4	−34	155	156.1	123.2	88.3	142.0
N. C.	48.9	40.1	−18	47	56.1	13.5	9.7	29.7
N. D.	37.6	17.2	−54	20	24.4	11.0	7.9	16.9
Ohio	227.1	149.7	−34	146	94.1	162.0	116.1	149.6
Okla.	42.6	32.6	−23	38	39.4	22.6	16.2	32.8
Ore.	60.3	43.2	−28	44	29.9	43.1	30.9	43.3
Pa.	106.5	114.4	+ 7	122	117.9	101.4	72.7	113.5
R. I.	13.9	13.2	− 5	14	13.8	11.6	8.3	13.0
S. C.	47.9	25.8	−46	29	29.6	20.5	14.7	26.3
S. D.	34.4	23.2	−33	26	25.5	10.5	7.6	17.4
Tenn.	78.3	70.3	−10	70	47.0	73.8	52.9	70.1
Tex.	202.0	131.0	−35	141	126.5	112.4	80.5	129.6
Utah	42.3	24.9	−41	26	21.4	23.3	16.7	25.3
Vt.	19.8	20.3	+ 3	19	13.8	23.5	16.8	20.3
Va.	56.6	91.4	+61	86	44.5	105.4	75.5	91.3
Wash.	54.4	45.9	−16	47	35.3	45.0	32.3	45.9
W. Va.	62.9	31.5	−50	32	26.2	31.2	22.3	31.4
Wis.	73.4	38.3	−48	44	50.0	26.2	18.8	37.7
Wyo.	32.9	26.6	−19	27	22.9	25.8	18.5	26.7
D. C.	13.0	22.7	+75	22	13.8	24.7	17.7	22.7
Puerto Rico	7.3	6.2	−15	12	....	....	....	6.0

† Includes $251 million in "D" funds and $65 million in "L" funds.
* Based on the assumption that states will obligate the total as follows:
- Two-thirds for Interstate, totaling $1,800 million, 90-10 matching basis, all states.
- One-third for ABC, making a total of $900 million, 50-50 matching basis, all states.

State matching funds have been added, construction estimated at 74% of total obligation.

Water Pollution Will Get Worse

- **Today's surface water must serve twice as many persons in 40 years, Hollis warns.**
- **The problem is aggravated by new pollutants and trend toward concentrated population.**

Another warning on the U.S.'s worsening long-range water-supply situation was sounded last week in Dallas.

The warning: 40 years from now 259 million Americans dependent on surface water supplies will have to make do with the same quantity—but deteriorated in quality—that now serves 100 million.

The speaker: Mark Hollis, Assistant Surgeon General and chief engineer of the U.S. Public Health Service.

Mr. Hollis also chided engineers in general for taking a rose-colored view of our lack of headway in fighting pollution. And he called for more construction, data collection and research to aid the battle against pollution.

Mr. Hollis delivered his sobering address at the annual convention of the Federation of Sewage and Industrial Wastes Associations. For federation members his words carried special weight. He was later installed as the new president of the organization (ENR Oct. 8, p. 48).

A major threat to water quality is exotic pollutants, Mr. Hollis declared, but he made it clear that there are other complications. He identified four main factors tending to make the water situation acute.

- We are congregating increasingly in gigantic metropolitan complexes.
- Technological advances in industry are creating pollutants that we have no way yet of evaluating.
- It's likely sooner or later that the predictable biological pollutants plus the less predictable contaminants from exotic chemical substances will jointly produce a chronic hazard.
- Our conventional waste-treatment technology is not abreast of the times.

Population growth will put three-fourths of us in metropolitan centers within 20 years, Mr. Hollis declared. These complexes will extend for hundreds of miles along super highways and major waterways, he said. This growth will demand more and more water, and it will shrink the distance along streams between one city's sewage outfall and the next city's water intake.

Adding to traditional pollutants, said Mr. Hollis, we now have hundreds of new synthetics used in new construction materials, clothing, drugs and foods. And we produced some 500 million tons of economic poisons last year for use as insecticides, fungicides, weed killers and chemical fertilizers.

We can't even measure these new pollutants yet, he declared. Current parameters of water pollution—five-day biochemical oxygen demand (BOD), bacterial indicator organisms, determination of natural organic and inorganic substances, even taste and odor tests—all were developed in early stages of modern sanitary engineering, he said. They were satisfactory yardsticks of pollution before World War II, he stated. "But they fall short, far short, of being effective measurements as re-use of water supplies becomes a dominant factor and as the character of pollution changes."

The cumulative effects of re-use can't be assessed either, Mr. Hollis declared. "BOD determination alone reflects only part of the picture," he said. "Each municipal use brings about a substantial buildup in naturally occurring minerals and a much larger increase in the exotic substances. These increases alter the environment of the stream and undoubtedly have profound and as yet ill-defined effects on beneficial stream uses."

The buildup of chemical pollutants in our streams is outmoding present day treatment, Mr. Hollis indicated. The buildup stems not only from industrial sewers, but also from changing metropolitan wastes and runoff from agricultural and other lands.

"Past practice has been to accept 90% removal of five-day BOD as being complete treatment of municipal waste and sufficient for discharge of the effluent to any stream," he said. "But I call to your attention the troublesome conditions below such cities as Chicago, Indianapolis, Columbus and Dayton."

He pointed out that dilution water flowing past these cities under sustained low flow today ranges from 0.14 to 0.65 cu ft per sec for each 1,000 persons and that population increases will lower the factor by 35 to 40% by 1980.

"Compare these factors," he suggested "with the 4 cu ft per sec per 1,000 population generally considered essential for primary effluents and 0.6 cu ft per sec per 1,000 population for 'complete' treatment."

"Today such rivers as the Ohio and Delaware are used and re-used several times at dependable low flows. But in the years ahead, we should expect six-time water re-use to be a common situation in many streams," he declared.

Mr. Hollis took engineers and study groups to task for not squarely facing the facts on pollution. State and interstate commissions reporting on pollution tend to take a rosy view, he said.

"Why do we in this profession feel that we have to report an optimistic progress when in fact there has been no progress on pollution abatement."

A great many things have been done, he conceded, but pollution is catching up with us faster than we are moving.

We ought to be building sewage treatment plants at an annual rate of above $500 million, he said. We are presently building at the rate of $400 million a year. This is twice the rate for the five years immediately preceding 1956, but still only approaches the level necessary merely to keep up with the increasing numbers of people served by sewers, he declared.

Lack of data on actual stream quality is a difficulty, Mr. Hollis said. The Public Health Service started the collection job last year by setting up a skeleton national water monitoring network. But this has extended only in limited degree to major streams. "Particularly important is information on the buildup of the new exotic chemicals," he said.

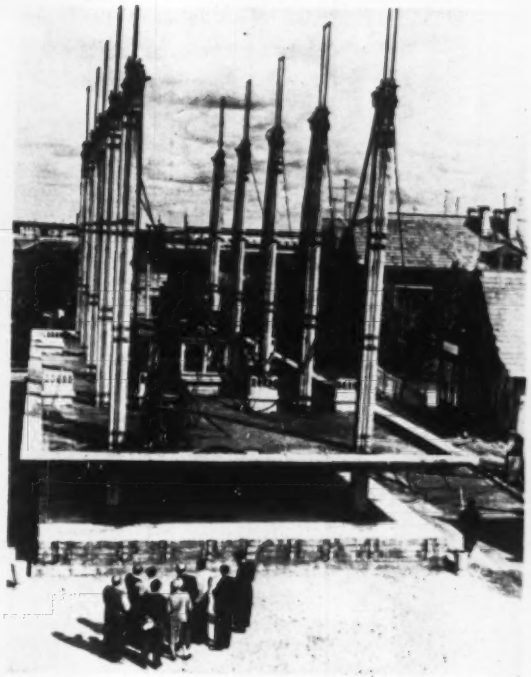
Some of the things we need to find by research are a whole new set of parameters to measure "total pollution," completely new methods of waste treatment, and an evaluation of health and economic effects as a crystallizing point for public recognition and support of the problems.

To Woo the Public, 'Sewage' Has to Go

FSIWA's board of control agreed last week in Dallas (above) to vote in December on a new name—Water Pollution Control Federation. The vote is something of a formality.

Primary target: Eliminate the word sewage, which doesn't help the group's standing with the public.

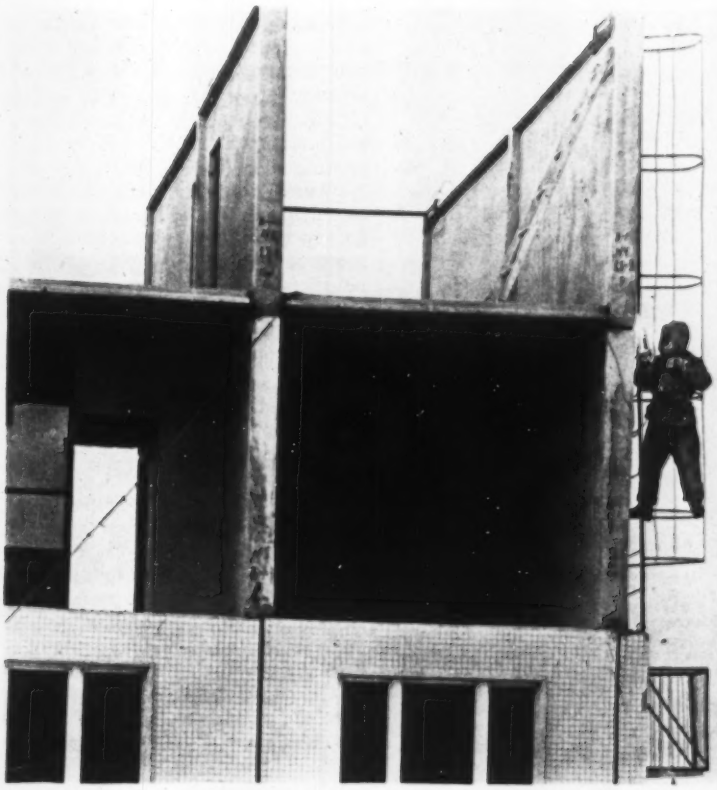
The board also voted to hire a public relations man and to join in a public relations effort already under way by the Water & Sewage Works Manufacturers Association and the American Water Works Association.



In Leningrad, a try at lift slabs . . .

With precast walls in the search for fast construction.

Russia Trys to Build Faster



In Moscow, welder works on five-story wall bearing model.

Russia needs a combination of design simplicity and construction speed to break its housing bottleneck. Though the government is set on precast concrete in general, countless design combinations are being tried in one-of-a kind housing units on practically all housing projects.

These two buildings are examples of the variations on precasting now going on in that country.

The lift slab unit went up in Leningrad's Barrikada section with precast concrete exterior wall panels.

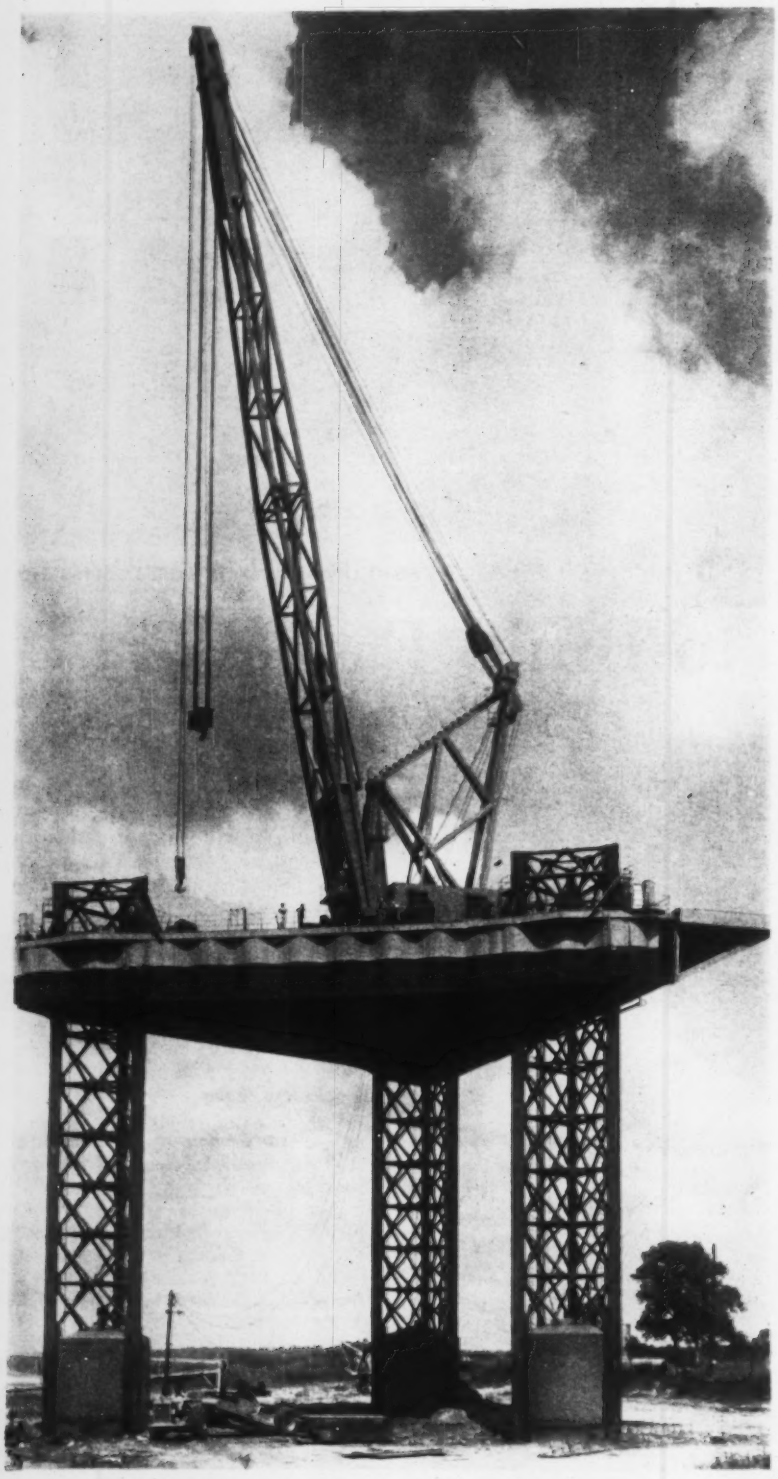
In keeping with current practice, there's apparently no central heating in the building. Chimney caps for individual apartment flues were built on the roof at ground level before lifting operations started.

The other unit, in Moscow, is completely factory produced. Transverse walls carry loads down through the structure; floor slabs are hung between the walls, and exterior walls are tacked to the outside.

The Soviet news agency Tass claims these five-story units take only 30 days to complete, but there's no information supplied about floor and gross areas of the buildings.

Tass says 16 of the experimental units are scheduled for construction in Russia this year.

'Texas Tower' to Erect Bridge



This three-legged rig carries a crane with a 210-ft boom.

A specially designed "Texas Tower" will play a major role in the construction of one of the world's great bridges.

The tower is a three-legged, portable unit similar to those used for offshore oil drilling. Instead of drilling equipment it carries a huge crane on its deck. It will be used in the erection of a 5.4-mile-long high-level bridge across the mouth of Venezuela's oil-rich Lake Maracaibo (ENR June 13, 1957, p. 28).

The 2,000-ton rig, built by R. G. LeTourneau of Longview, Texas, was tested near Vicksburg, Miss., and is now under tow on its long voyage to South America. When it reaches the job site, 27 electric motors will push the three legs of the tower into the soft bottom of the 70-ft-deep lake, and will raise the platform and its crane clear of the water.

The crane that will do the work is big. It carries a 210-ft boom. It can lift 250 tons set at a point 65 ft ahead of the boom base, or 100 tons 100 ft out. Its 8,500 ft of 1¼-in. cable alone weighs more than 15 tons. Power for the crane is supplied by seven LeTourneau ac and dc generators, which are turned by diesel engines totaling 1,200 horsepower.

The unit will be used to handle and install prestressed concrete foundation piles, some of which are 180 ft long and weigh 100 tons. It will also be used for setting prestressed concrete beams weighing almost half a million pounds each.

As each section of the bridge is completed, the tower will pull up its legs, float to the next site, lower its legs and continue with erection. Among the innovations contained in the new unit is a self-leveling device that automatically compensates for any settlement of legs.

The entire lake crossing will be about 28,600 ft in length. Of that, 7,130 ft will be bridged. The structure will contain a 1,312-ft main span consisting of two cable-supported, prestressed cantilevers and a closing span of 230 ft. In all, there will be 87 spans, each ranging upwards of 125 ft in length. The four main cables will be encased in concrete. The bridge towers, which are to be of reinforced concrete, will be 390 ft high. The deck will be 68½ ft wide. It will carry four lanes of vehicular traffic and a single track rail line.

The structure is being built by a combine, Consorcio Puente Maracaibo, which consists of Julius Berger of Germany and Precomprimido of Venezuela. Design of the bridge was handled by Ricardo Morandi of Rome.

FAA Names Chrysler Corp. To Design Mobile Lounges

The prototype mobile lounges for Dulles International Airport at Chantilly, Va., near Washington, will be built by Chrysler Corp., Center Line, Mich., under a $750,000 contract from Federal Aviation Agency.

The two-way shuttle lounges will ferry passengers between the Dulles terminal building and aircraft parked at servicing stations on the apron (ENR Apr. 9, p. 23).

The mobile lounges are to be self-propelled in either direction, with operating controls for drivers at both ends. They must be self-leveling to adjust to airliner door sills that vary in height from 8 ft to 13.5 ft from the pavement.

Electric Air Conditioning Gets the Nod Over Gas

A dispute over the cost of gas vs. electric air conditioning has been settled by the General Services Administration in favor of electricity.

The GSA had postponed awarding a construction contract for a new federal building at Little Rock, Ark., until it had heard all the cost comparison arguments.

The bids on the building were opened last June. Robert E. McKee Construction Co., Dallas, was low at $5,671,400, including installation of two 600-ton refrigeration units powered by electricity, or $5,723,000 with gas units. The J. W. Bateson Construction Co., Dallas, was low at $5,709,000 on an alternate bid, which was to use gas air conditioning units.

After the bids were opened Arkansas Louisiana Gas Co. went before the GSA with figures intended to show that gas-operated air conditioning was less expensive in the long run because of lower operating costs.

Arkansas Power and Light Co. rushed to the defense of the McKee firm, contending that electric equipment would not only cost less to install but less to operate and maintain.

Pilot Conversion Plant Uses 'Direct Freezing'

A pilot seawater conversion plant using a "direct freezing" process is now in operation. The plant, built by Carrier Corp. under contract from the Department of Interior, was dedicated in Syracuse last week by A. L. Miller, director of the Office of Saline Water.

The freezing process developed by Carrier Corp. is one of several processes under consideration by Interior for the demonstration plant to be located on the East Coast. There will be five demonstration plants in all.

Metal Deck Moves Into Bay Area

Newest addition to the Oakland, Calif., skyline is this $2.5-million, 14-story cooperative apartment house.

This is one of the first high-rise buildings of its type in the Bay Area. Floors are 2½-in. minimum thickness slabs of lightweight concrete, cast in place over corrugated sheet metal. They are reinforced with 3x3-x10/10 welded wire mesh.

Concrete slabs are tied to beams of the steel frame by 2-in. U-shaped anchors spot-welded through the sheet metal to the joists. Anchors are completely embedded in the concrete slab, which acts as a diaphragm to help resist lateral forces.

Fireproofing was accomplished with vermiculite plaster ceiling, continuous with all steel members. Steel columns were encased in 2 in. of plaster, while exterior members were fireproofed in concrete.

Harada and Meu, San Francisco, were architects; Jalson Co., Inc., Oakland, was general contractor.

Tunnel Helps East Meet West

Houma, La., a small town about 56 miles southwest of New Orleans, will stop leading a double life by the middle of next year.

For years Louisiana's winding Intracoastal Canal has separated the town into East Houma and West Houma. But a $6-million, 960-ft vehicular tunnel being built under the waterway will unite the community by next July. Construction of the tube is now more than 40% complete.

The tunnel is of reinforced concrete, with a waterproof membrane and steel jacket encasing the portion below water level. Some 7,000 piles with a combined linear length of 420,000 ft are being driven into the tunnel's roadbed. About 60,000 cu yd of concrete will be used.

The interior of the Houma tube will be 14 ft high and 30 ft wide. It will carry two traffic lanes and a pedestrian lane.

Construction was delayed for a short time last summer when a canal barge rammed a section of a steel piling cofferdam built to protect the first half of the construction across the canal.

Fromherz Engineers, New Orleans, and Singstad & Baillie, New York City, are consultants on the job.

Around the World . . .

• Petroleum carryall—A new $54-million, 447-mile pipeline carries a variety of oil products simultaneously from Philadelphia refineries to Cleveland. High-pressure pumps keep various petroleum commodities separated and moving underground. The pipeline is 24 in. in diameter at Philadelphia and is graduated down to 14 in. at Cleveland.

• Denver skyscraper—Construction will start next year on a 24-story, $6-million office building in Denver, Colo. Henry Ervin, Denver, is architect for the project being built by Industrial Federal Savings and Loan Association.

• Calling all compact cars—In Detroit, where hundreds of motorists have been forced to abandon their cars in recent weeks during three successive floodings of the city's expressways, waggish TV and radio weather forecasters are broadcasting "small car warnings" whenever a thundershower is in the offing.

• Seaport for citrus—The Israeli government has hired Fredric R. Harris, Inc., New York City consultants, to plan a $35-million deep water port for Ashdod, south of Tel Aviv. When completed, the Ashdod port can handle 8 million cases of citrus and 2 million tons of other cargo.

• Canadian nuclear project—Atomic Energy of Canada Ltd. will build a new nuclear energy research and development center in Manitoba. Canada's only major nuclear research center now is the Chalk River Establishment on the Ottawa River.

• U. S.-Iran highway job—The United States has signed a $25-million load agreement with Iran that will finance 369 miles of highways in that country. Amann & Whitney, New York City consultants, will supervise the roadbuilding project.

• Fine arts center—Under consideration are plans drawn up by architect Edward D. Stone for a National Cultural Center in Washington, D. C. The project, which includes an opera house, a concert hall, smaller auditoriums and under-street parking, would cost between $10 million and $25 million.

• U. N. Library—The United Nations will construct a new library to house its growing collection of material on international affairs. The The $6.2-million cost will be paid by the Ford Foundation.

• Subway inspection—Coverdale & Colpitts, consulting engineers, has been picked to do a safety investigation of New York City's subways.

Single Bids Edge Combinations

Single school construction bids barely beat a try at combination bidding for four schools in New York City last week (ENR Oct. 1, p. 17). For the first time contractors had the option of bidding the four schools individually or as a single proposal.

Individual contracts for general construction won over combination bidding by only 0.4%—$23,000. Total of low individual bids came to $6,332,000.

There were some close figures involved. Wilaka Construction Co., New York City, which submitted the lowest combination bid, walked off with two of the individual contracts. Except for one bid slightly above the low, the firm would have had the entire package, Board of Education officials said.

A coin-flip may decide the winner of the third contract. Caristo Construction Corp. and Mars Associates, both of New York City, submitted identical bids of $1.43 million for a school in Queens. Caristo won the fourth school over 10 other bidders at $1.69 million.

All bids were in a close range and total low bids on each school were all below the board's engineering estimates by 0.7 to 3.3%.

There was just one exception. Daniel J. Rice, Inc., Long Island City, took all four heating contracts at $825,600, its figure for both the combination bid and the sum of its individual bids.

The board's first try at combination bidding covered two schools in Manhattan, one in Queens and one in the Bronx. The board expects even closer bidding in the future when it lets schools nearer each other.

Chief benefit of the combination bidding: It forced individual bids low to offset the competitive strength of the package bids, according to Deputy Superintendent Jules Haut.

"Bidders were feeling their way on this one," Mr. Haut said. "We think we really have something here and will try combination bids again, with a few wrinkles, including closer geographical grouping."

Passamaquoddy Feasible For U. S., Say Engineers

The long-discussed Passamaquoddy Power Project—to harness Bay of Fundy tides to produce power for the U. S. and Canada—has a qualified nod from an engineering study group.

Combined with a peaking hydro plant, the Passamaquoddy project would be economically feasible for the U. S. but not for Canada—assuming equal division of power and first cost. That's the gist of a report by the International Passamaquoddy Engineering Board to the International Joint Commission.

Total estimated cost would be some $688 million for the tidal project and a hydro plant at Rankin Rapids on the upper St. John River in Maine. Higher interest rates north of the border would eat up the benefits for Canada, the board reported.

The rate figured for the Canadian share was 4½%.

The estimates are rough, and the true picture for the U. S. is not quite as bright as it appears at first glance. Money for the U. S. share was figured at 2½%, but would actually cost more. A higher rate would run the price up materially.

The commissioners agreed to consider the report immediately. Within three months they will take up details with the engineer board and a fisheries board, which also submitted a report. Then they will hold hearings for interested parties.

Early next year the IJC will begin work on its own report.

Big Wharf Project Proposed for Bay Area

A planning study prepared for the Port of San Francisco—a state agency—has recommended construction of a $28.3-million wharf at Islais Creek channel, about three miles south of the San Francisco-Oakland Bay Bridge.

The report also recommends an $8-million, four-berth pier at China Basin, a mile south of the bridge.

Financing for both projects would come from a $50-million general obligation bond issue approved by California voters last fall.

The Islais Creek project—nine berths and an adjoining warehouse complex—would be equipped to handle modern container and trailer ships and freighters. Ebasco Services, Inc., which prepared the study, predicts the port could move up to 4½ times as much cargo over the new berths as it now does over the same number of existing berths—and at one-fifth the present cargo-handling costs.

Port engineers and administrators are now studying the report, which includes no detailed plans.

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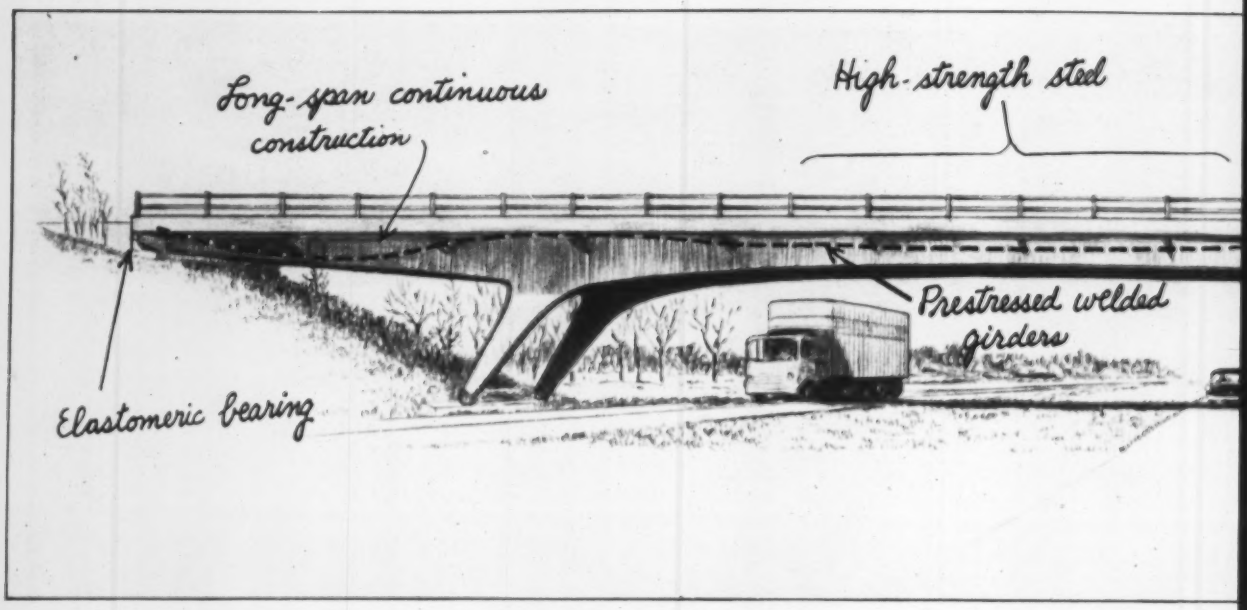


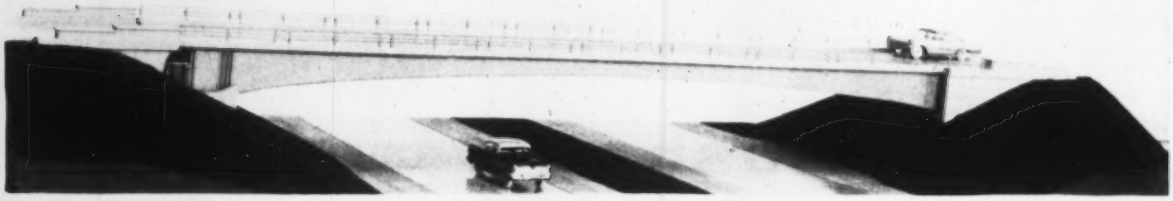
Contest Produces Ideas for

The $44,000 Steel Highway Bridge Design Competition sponsored by the American Bridge Division of U. S. Steel Corp., achieved its purpose. It generated a host of suggestions for better bridge construction.

The contest also revealed what tomorrow's bridges might be like if participants had their way (see above).

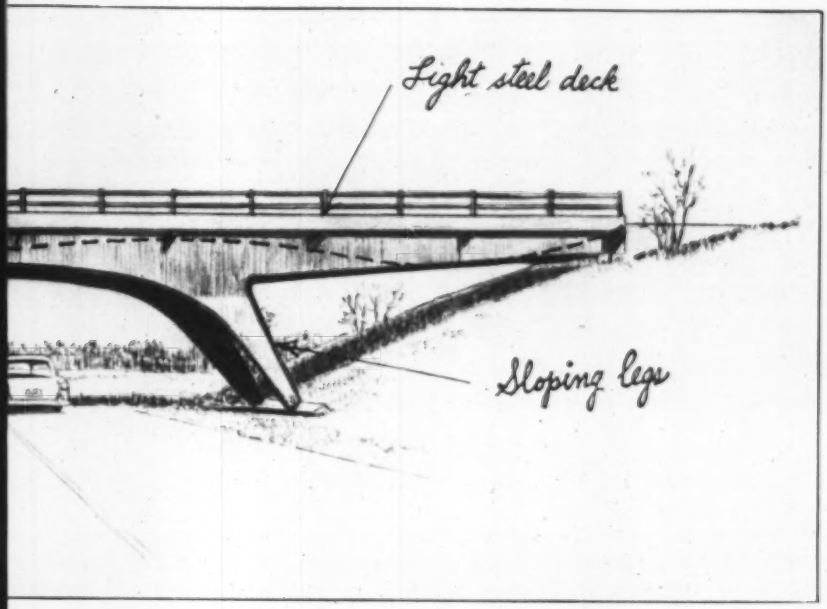
These bridge designers would like to design highway crossings without any supports near or between roadways. They would like the main members of steel highway bridges to be welded plate girders, with high-strength steel in those portions where it would be most effective. And they would like the deck to help the girders carry the loads.

The contest called for design of "an overpass structure in steel to carry a two-lane highway at right angles over a four-lane interstate highway on level terrain." Designs had to be in accordance with American Association of State Highway Officials standards (H20-S16 loading) and Bureau of Public Roads' "Geometric Design Standards for National System of Interstate and Defense Highways."



$15,000 FIRST PRIZE in design contest was for a 160-ft single-span welded girder, with high-strength steel flange plates. Slab and girders are designed for composite action. Girder ends are restrained against rotation.

$5,000 AWARD: a two-span plate girder, shop welded and field bolted. Center pier is set in the median strip, can be rotated to carry skew spans, if desired. Spans are 80 ft each.



Tomorrow's Bridges

First prize of $15,000 in the professional classification went to Allan M. Beesing, a structural design engineer employed by James J. MacDonald, Buffalo, N. Y., consulting engineer.

The winning design was a welded plate girder with restrained ends. It calls for a 160-ft span over the four lanes, with abutments well up the embankments; high-strength steel flange plates, to permit a shallower section; web stiffeners on the inside, for a clean exterior appearance; and composite action of concrete deck and girders, for greater rigidity and less deflection.

End restraint allows the girders to resist bending moments at the ends, thus reducing the interior moments to be carried and allowing use of a gracefully curved bottom flange. To achieve end restraint, Mr. Beesing extends the girders 10 ft beyond the bearings and anchors each end with an inverted bearing.

The 15 winners were picked by a six-man Jury of Award headed by L. Abbett Post, AISC executive vice president. Other judges were Leon Chatelain, Jr., of Chatelain, Gouge and Nolan, architects, Washington, D.C.; Craig P. Hazelet of Hazelet and Erdal, consulting engineers, Louisville, Ky.; Walter E. Jessup, consulting engineer, Pasadena, Calif.; Eugene L. Macdonald, board chairman, Parsons, Brinckerhoff, Hall and Macdonald, consulting engineers, New York City; C. Earl Webb, consulting engineer, Okemos, Mich.

Chances seem good that the ideas of the contestants, both winners and non-winners, will influence future bridge design. Said the judges:

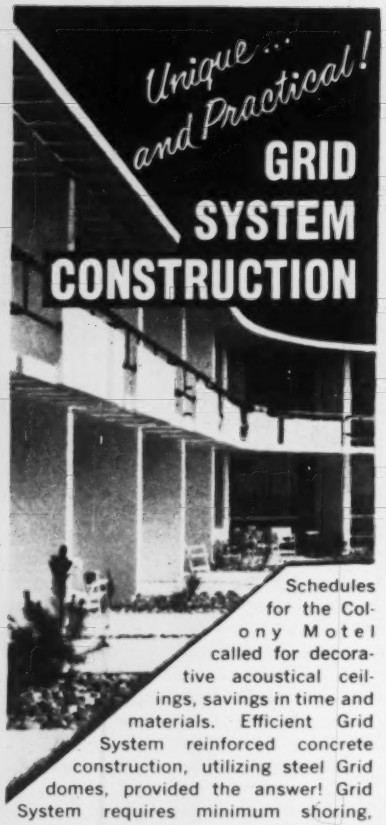
"Of special note was the tendency to span the complete roadway without a pier, increasing safety to motorists and achieving a more pleasing esthetic effect . . ."—L. Abbett Post.

"It was good to see so many of the contestants eliminate the center pier, thus reducing a driving hazard. All in all, there is little doubt that this competition produced many design features that will result in better looking, safer and more economical bridges in the future . . ."—C. Earl Webb.

"The majority of the entries made use of composite action in floors and continuity in girders, achieving maximum utilization of the properties of

$10,000 AWARD: a three-span welded girder, partly of high-strength steel. Main span is 136 ft. Sloping columns are continuous with the girders, which are designed for composite action with a two-way reinforced concrete roadway slab.

TOP STUDENT PRIZE was awarded for a bridge with welded high-strength steel girders supported on four sets of sloping columns. The two sets in the median strip form a V. Main spans are each 61½ ft.



Schedules for the Colony Motel called for decorative acoustical ceilings, savings in time and materials. Efficient Grid System reinforced concrete construction, utilizing steel Grid domes, provided the answer! Grid System requires minimum shoring, speeds building time, saves material and labor costs over solid slab construction — and Grid's coffered ceiling effect provides neat, modern appearance at minimum cost.

Colony Motel, Swampscott, Massachusetts. Architect: Salsberg & LeBlanc. Construction: Poley-Abrams Corp.

Interior of the Colony illustrates Grid's modular appearance. Economical Grid System ceilings are just painted — no finishing or acoustical treatment is required.

GRID FLAT SLAB CORPORATION

GRID SYSTEM T.M.

Boston 25, Massachusetts

Originators and pioneers of GRID SYSTEM Reinforced Concrete Construction since 1921.

GRID SYSTEM Grid Flat Slab Corporation
761 Dudley Street
Boston, Massachusetts EN-10

Gentlemen:

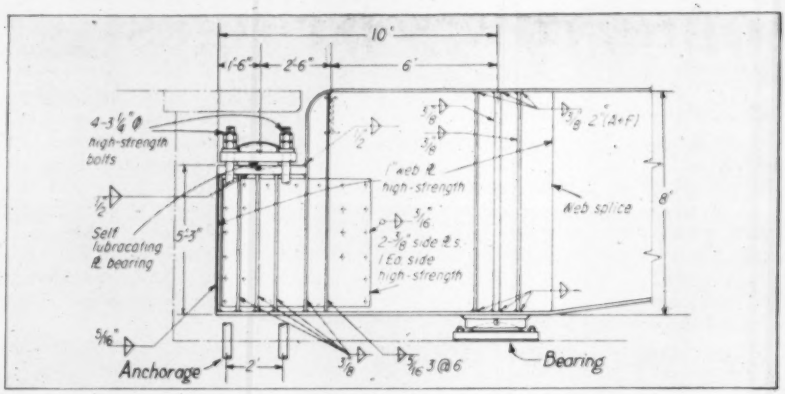
☐ I would like to know more about Grid System construction. Please send me your latest catalog.

Name_____

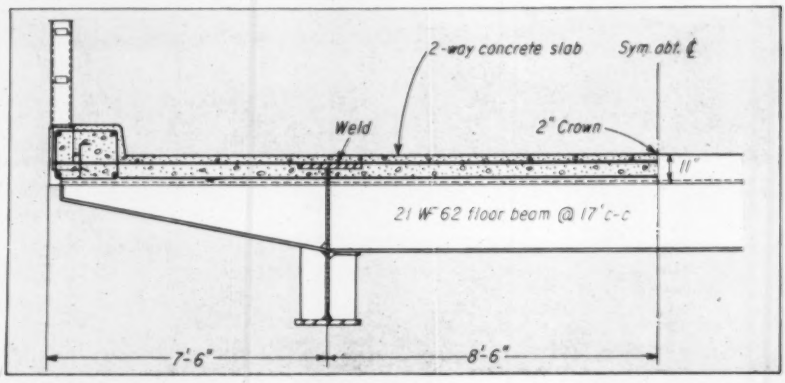
Address_____

City_____ State_____

ALLAN M. BEESING, Buffalo, N. Y., engineer, won first prize with a design for welded girders with ends restrained against rotation.



END-RESTRAINT DETAIL calls for extension of the girder 10 ft beyond its support and anchorage with four high-strength bolts.



COMPOSITE ACTION in the bridge that won first honorable mention is to be achieved by welding transverse bars to the girder tops, which are embedded in the slab.

steel. Note, too, that the intelligent use of high-strength steels gives many of the top entries a light, clean appearance . . . "—Walter E. Jessup.

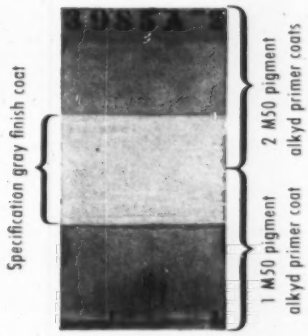
"In emphasizing the longer spans, the contestants definitely did not overlook economy. In fact, they placed strong emphasis on prefabricated sections, which should reduce field operation costs to a minimum . . . In my

Area shaded from sun by wooden panel holder

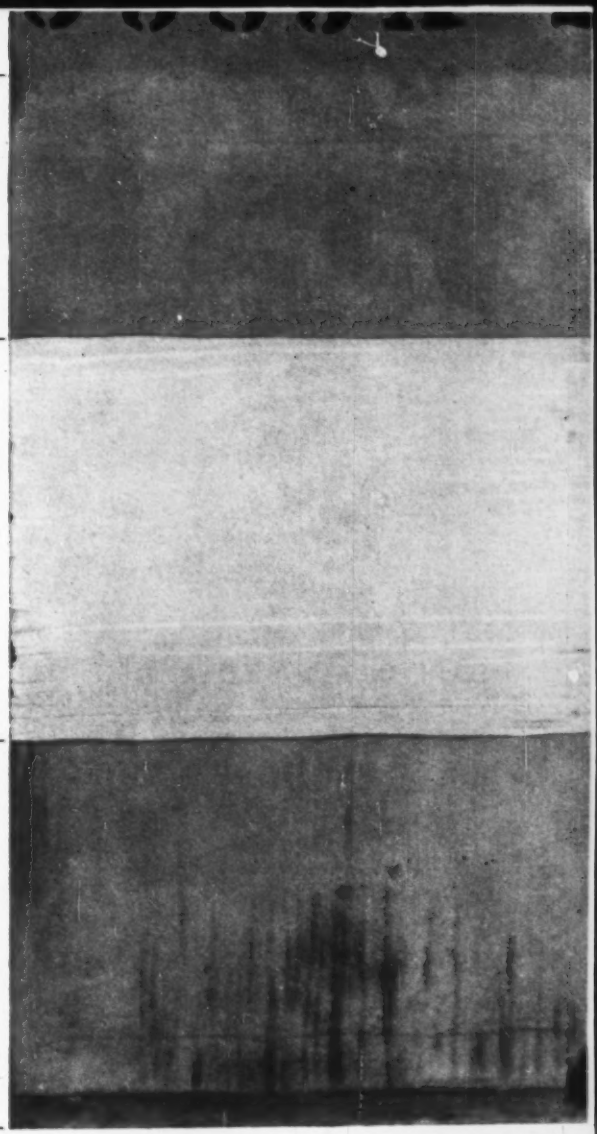
After 9 years exposure, fading has barely begun to show in this 3-mil *M50* primer coat. Same type paint made with standard rust inhibiting pigment chalked and showed rusting in less than half this time.

Unshaded area

How test paints shown at right were applied



Exposed 9 years 45° S
Each coat 1.5 mils



1.5 mil M50 primer coat is still in place, still actively resisting corrosion after 9 years. Same type paint made with conventional pigment almost completely disappeared in the same period.

Proof M50 pigment Defense in Depth paints deliver lasting weather resistance

Never before such durable metal protection for highway bridges, guard posts, railings, sign posts. And never before such attractive color choices.

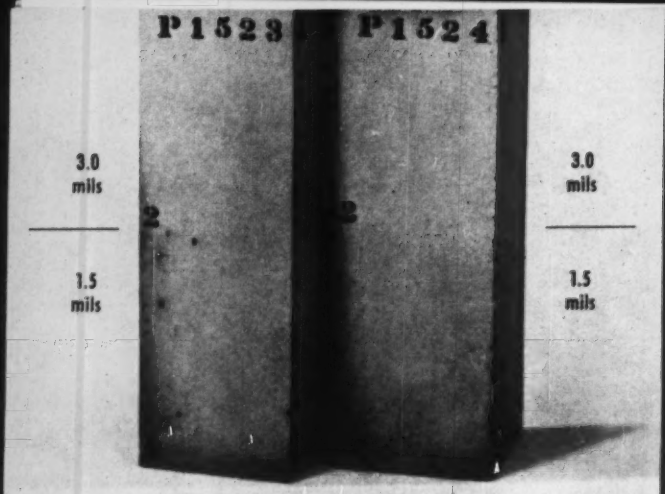
Here you see how typical M50 pigment primer coats weather 9 years exposure. The advantages of weather resistance like this in the primer coat of an anti-corrosive paint system cannot be overstressed. Long after weather has worked its way through intermediate and finish coats, primers made with *M50* basic lead silico chromate pigment* still provide excellent weather protection. Rust inhibiting action in the film continues unchecked. Even breaks in top coats traceable to damage or painting mishaps do little harm.

The excellent chalk resistance shown by *M50* pigment primers also pays off handsomely. When steel erection is delayed, re-preparation of the steel is rarely needed. On-the-job spot priming is sharply reduced.

On the next page, see how typical *M50 finish* paints perform in severe exposure tests.

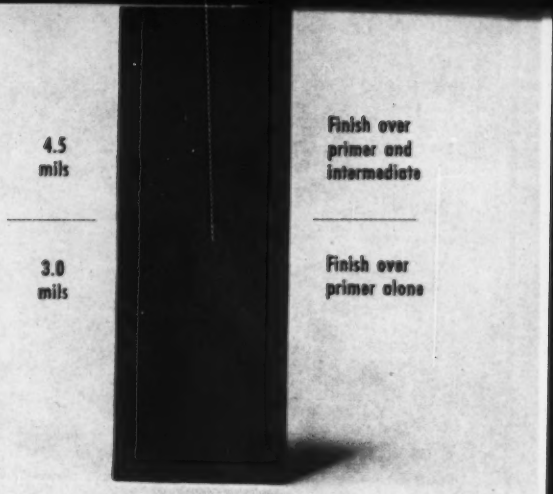
National Lead Company

General Offices: 111 Broadway, New York 6, N.Y.



No visible splotching!

Test angles above show how a typical *M50* pigment finish paint applied directly to steel (no primer or intermediate) withstands 4 years exposure in industrial atmospheres. Left, *M50* pigment finish applied on rusted surface with retained mill scale. Right, same paint applied on clean, sand-blasted surface.



No visible chalking!

This test angle demonstrates the excellent resistance to chalking or fading shown by *M50* pigment Defense in Depth paints. Paint has been exposed 2 years, 45°S in normal atmosphere. The insolubility and stability of *M50* fused lead chromate pigment contributes substantially to this performance.

Here are two performance plusses you can expect from M50 anti-corrosive finish paints exposed to weather

With *M50** pigment Defense in Depth paints, *lasting* weather resistance is obtained in *all* coats . . . not just intermediates and finishes. This is clearly brought out by exposure tests such as the ones shown on this and the preceding page.

Along with lasting 3-deep weather resistance, *M50* pigment anti-corrosive paint systems give you 3-deep rust inhibition and 3-deep color choice. Never before has it been possible to produce specification anti-corrosive paints with comparable performances that could be sold at current market levels.

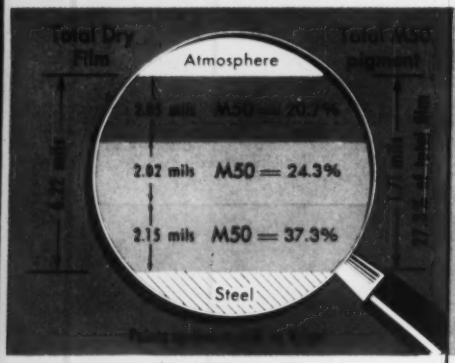
Now, with National Lead's *M50* pigment, most paint makers can make such paints.

National Lead is prepared to help your supplier formulate *M50* pigment paints and also: (1) show you *M50* pigment paint exposure test panels at its Sayville, L. I. Test Station; (2) send you a 24-page descriptive brochure, "Defense in Depth." (Mail coupon below); (3) provide technical aid in test applications; (4) help you develop suitable specifications for paints containing *M50* pigment.

For M50 pigment paints themselves, contact your regular suppliers.

*National Lead Company trademark for a basic lead silico chromate pigment

Why M50 Defense in Depth paints give you metal protection beyond all former concepts

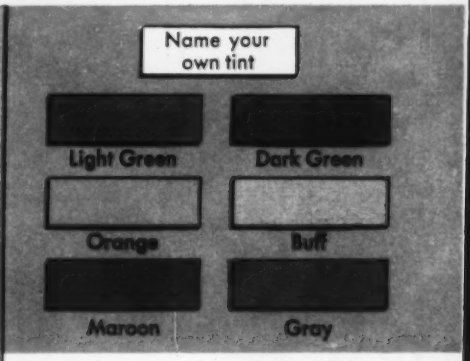


In every coat . . . rust inhibition! Fused lead chromate is noted for rust-inhibition. The *M50* pigment particle structure permits paint makers to include large proportions of lead chromate in all coats of anti-corrosive systems.

2 M50 pigment alkyd primer coats
Exposed 9 yrs 45°S
Each coat 1.5 mils dry film

M50 pigment finish put on rusty steel
Exposed 4 yrs 45°S in industrial atmosphere

In every coat . . . weather resistance! *M50* pigment is insoluble in water and has the excellent tint retention properties of fused lead chromate. Unlike other rust inhibitors, it actually boosts weather resistance of paints.



In every coat . . . your choice of colors! *M50* pigment gets along well with most tinting pigments, permits paint makers a wide range of colors . . . not only in intermediates and finishes but in primer coats as well. Colors stay true.

M50 Defense in Depth

National Lead Company,
111 Broadway, New York 6, N. Y.

Gentlemen: Please send me your 24-page brochure, "Defense in Depth." Include color card of the six *M50* pigment paints you recommend for steel highway structures.

Name _____ Title _____

Firm or Dept _____

Address _____

City _____ State _____

opinion, there was no single design submitted that could represent the ideal bridge. On the other hand, an ideal bridge could certainly result from a composite of the many fine ideas received . . ."—Craig P. Hazelet.

"It was noteworthy that the long span . . . appealed to many of our contestants, probably because of appearance and safety factors. It was in these designs that prestressing was frequently incorporated to reduce the weight, and hopefully, the cost of the span . . ." —Eugene L. Macdonald.

Here are the other prize winners:

First honorable mention, $10,000, was awarded to Donald H. Olson, Two Harbors, Minn., and Jorgen Tvilstegaard, Minneapolis, Minn. Second honorable mention, $5,000, went to Douglas M. Fraleigh, Marvin A. Shulman and William J. Jurkovich, Sacramento, Calif.

Five third honorable mentions of $1,000 each went to Harry R. Powell, consulting engineer, Seattle, Wash, Robert J. Prowse, Concord, N. H., and Klaus Wehrli-Birchner, Zurich, Switzerland, and to joint entries of Michael and David Brunt, of Aston Clinton, England; and Muhittin Ozvurt and Tsu-Ming Yang, Springfield, Ill.

First prize in the student classification worth $4,000 went to Niels Gimsing and Hans Nyvold, Copenhagen, Denmark. They are students at the Technical University of Denmark.

Students who won other prizes are James C. Costello, Dublin, Ireland, $2,000 first honorable mention; James A. Wood, Jack A. Berridge and William O. Evers, $1,000 first honorable mention; and Harland C. Zenk, Truman, Minn., Troy R. Roberts, Neosho, Mo., Joseph A. Yura, Allentown, Pa., and a joint entry of Albert C. Knoell, Philadelphia, Pa., and Rodger K. Giesecke, Gloucester, N. J., $500 third honorable mentions.

Entries were received from 264 professional engineers and 36 college students. About 100 entries came from 28 foreign countries. The contest was conducted under the auspices of the American Institute of Steel Construction.

American Bridge sponsored the competition as a type of research to recruit original thinking by engineers. "We were anxious to learn how skillfully engineers and architects could utilize the wide variety of steels now available to them," says President A. J. Paddock.

The highway bridge design problem was selected in view of the large number of bridges to be constructed in the next 15 years on the 41,000-mile Interstate and defense highway system alone.

From here on, *all you need is a wrench*

Seattle, Washington, engineered this 8585-ft. addition to its growing network of Dresser-Coupled steel water lines. All joints on the 40-ft. lengths of 48-inch pipe were Dresser-Coupled. The line was laid by Harbor Construction Company.

The fast way is the Dresser way

No unforeseen delays, no unforeseen costs when you join water pipe the Dresser way. Non-rigid Dresser Couplings go on fast . . . without expensive equipment or specialized labor. All you need is a wrench . . . and with long lengths of steel pipe, you need fewer joints. Bottle-tight joints make it unnecessary to allow for leakage. Figure your next water line with Dresser Couplings . . . you can calculate your costs accurately . . . and *lower!*

It takes two man-minutes per bolt with a Dresser Coupling.

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DRESSER MANUFACTURING DIVISION

ONE OF THE DRESSER INDUSTRIES

FOR HIGHWAYS WITH A SOLID FUTURE

Concrete

For Snoqualmie Pass, ...the only pavement with the built-in

High in the Cascade Mountains of Washington, new Interstate 90 year in and year out must face the toughest punishment weather can give.

Snows are heavy in Snoqualmie Pass. 30 feet a year isn't unusual. For 5 months a year, it takes the biggest, heaviest snow removal equipment to keep the road passable.

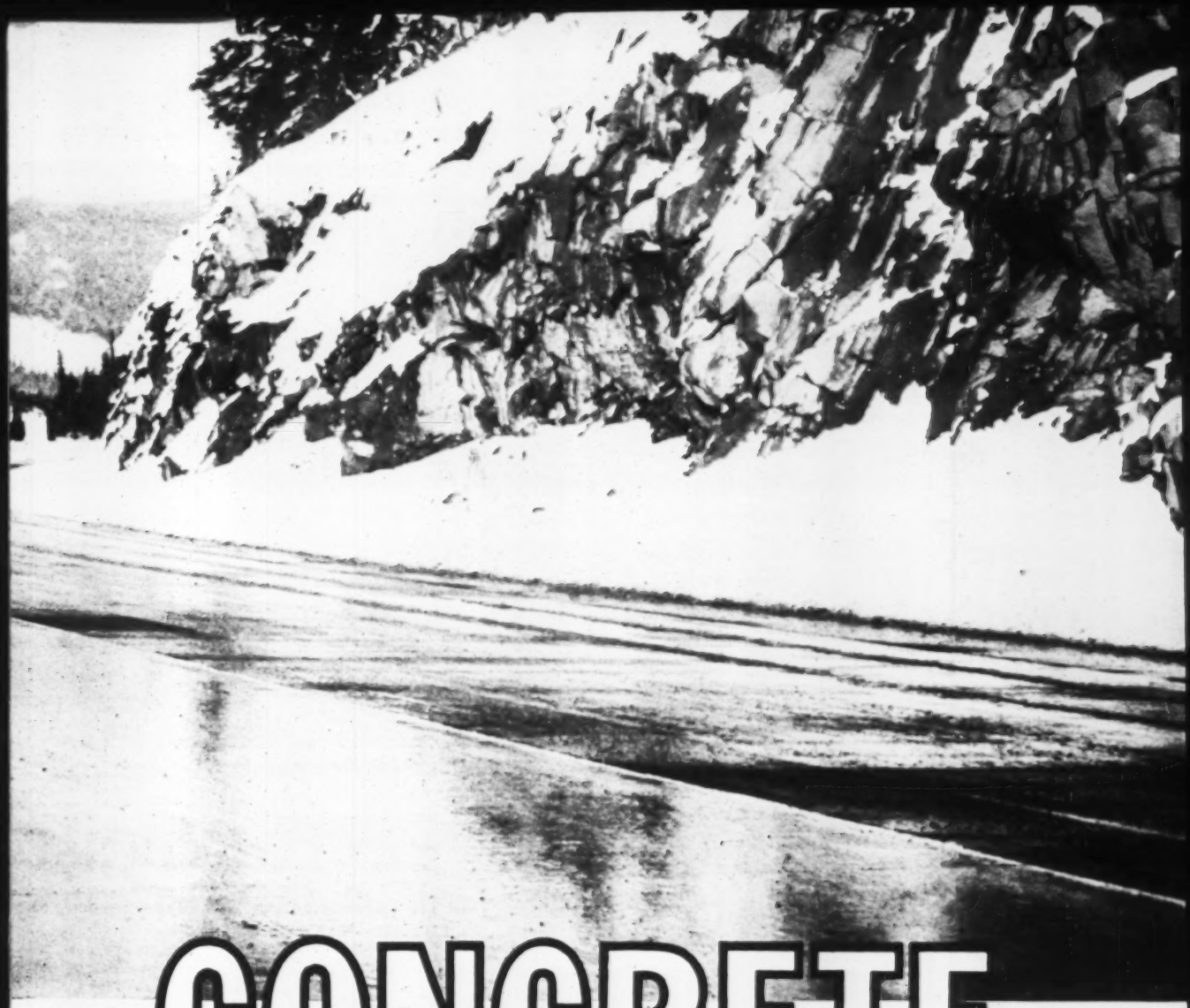
Traffic is plentiful and, when the road is posted, every car uses chains designed to take a deep bite. This is really tough on the road surface, but concrete is meeting every test.

As a special safeguard, bubbles by the billions (air entrainment) have been put into this concrete. And through the ups and downs of temperature and repeated freezing and thawing, the surface is kept free of any scaling or break-up. Even tons of de-icing chemicals can't cause harm.

Here's a perfect example of the *stability* found in concrete under the most difficult and extreme conditions. One more reason why you're seeing so many new concrete highways. They are stretching out mile after mile on Interstate and other heavy-duty routes everywhere.

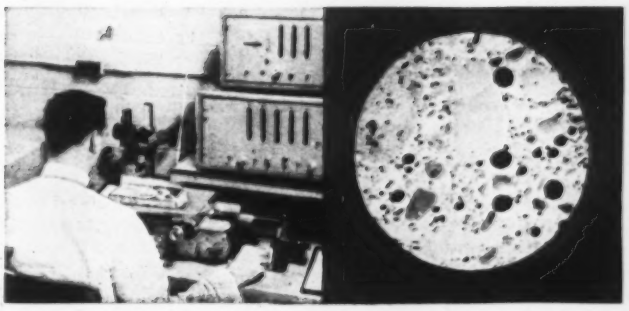
PORTLAND CEMENT ASSOCIATION

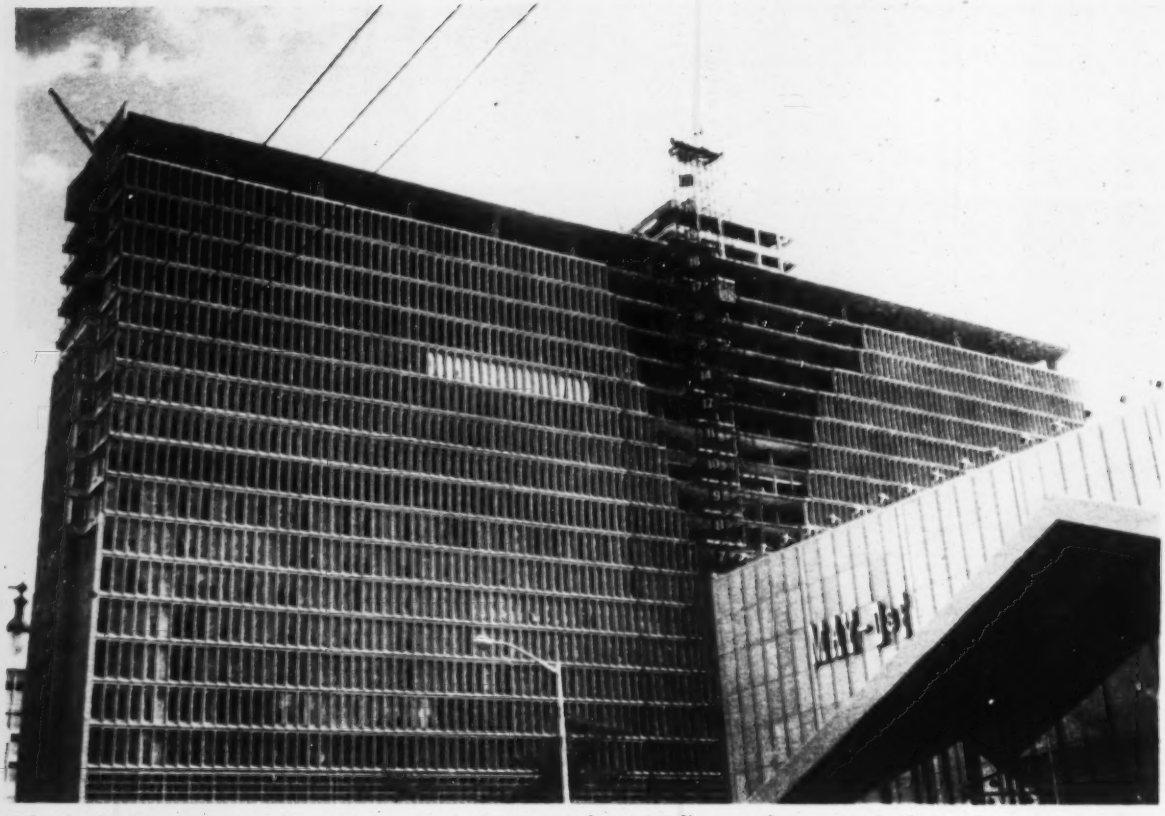
A national organization to improve and extend the uses of concrete



it's CONCRETE
protection against weather damage

Checking bubbles by the billions, the *air void analyzer* gives engineers an electronic control on air entrainment. Some 5 million bubbles per cubic inch of concrete (magnified specimen at right) give freezing moisture the room to expand.





It looks light and airy, but the precast skin weighs 645 lb per ft on each floor.

EXCAVATION and foundation construction went on side by side. Levels at left extend under street to department store.

Precast

Most striking feature of the new $20-million Denver-Hilton Hotel is the grillwork of precast concrete forming the exterior walls. From a structural standpoint, supporting this heavy "skin" was a challenging problem. And erecting the two-ton sections called for unusual hoisting procedures.

The 884-room hotel dominates the $38-million Court House Square development, which has been under construction for the past three years. The hotel is 20 stories high plus penthouse, and rises 250 ft above street level and extends 60 ft into the ground. A structural "spine" braces the tower against wind loads. Besides the hotel, there's a four-story department store with one concourse level below ground and three basements, a skating rink and underground parking facilities.

Construction will be substantially completed by the end of the year. The first guest should check in next March.

Concrete for the hotel's "skin" was designed with a minimum compressive strength of 5,500 psi at 28 days. Completed sections were etched with acid in order to expose the gravel aggregate.

Cranes placed all the wall sections. For the tower, two cranes were set on the roof.

Window Frames Cover Hotel

Heaviest of the precast frames weigh 6,000 lb each. All are a uniform depth —20½ in.—whether part of the window frame mullions on the upper floors or in a screenwall around the lower part of the building. Flat panels, 3½ in. thick, cover blank areas of the exterior.

At the lobby floor, one level above the street and running the full length of the building, are continuous mullion sections containing fixed glass that stand 10 ft high by 2 ft 2 in. wide. The next 33 ft of exterior wall above this band is a precast screenwall extending up to the fifth floor. This wall covers the 23-ft-high lobby and a mechanical level just above it. Concrete block encloses the mechanical room, providing a narrow light space between it and the screen-wall.

The screen-wall and mullion band weighs two tons per lin foot, too much for the lobby floor to support from below. Consequently, it all hangs on heavy steel straps attached to the fifth floor.

The steel straps, 6 x ½ in., are attached to steel members on the bottom of the slab. The framing members, in turn, are bolted up through the slab, which cantilevers 8 ft past the column line. To support the heavy loading required an 18-in.-thick floor slab, heavily reinforced.

The screen-wall sections are cast in two basic patterns to form a geometric design in the assembled wall. Their ribs, or mullions, are 8 in. thick at the inside and taper to 2 in. thick at the outside of the wall. Clear openings with single-pane glass measure 14 x 14 in. and 26 x 14 in.

One of the biggest construction tasks was erecting the screen-wall and window frame mullions. Tremendous tonnages were involved and fast erection was needed to keep on schedule.

Contractors solution: A pair of crawler cranes on the roof. This proved considerably faster than the conventional drum and hoist method.

The boom, cabin and hoist of each crane was taken off its carriage and hoisted to the roof top. There they were skid-mounted on wide-flange beams laid directly on the concrete roof slab. Extra counterweights were added to the rear of each crane for added safety when lifting the heaviest, three-ton cast stone sections.

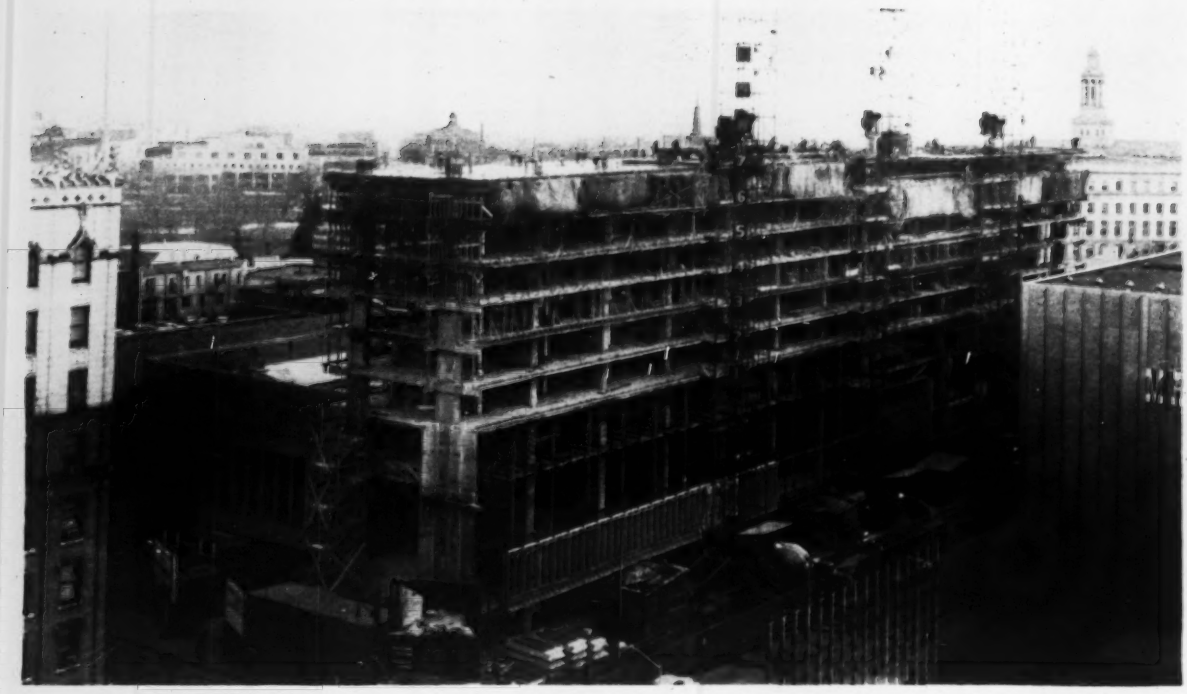
Each crane handled half the building. The operators moved the cranes from one location to another along the roof by winching with the crane's power.

Starting at the fifth floor, there are 17 floors enclosed with floor-to-ceiling precast window wall sections. Hoisting this material into place isn't light work either. The assembled wall weighs 645 lb per ft on each floor, with 10 window sections in each 30 ft bay.

One unusual aspect of the job: All the mullions and screen-wall sections were made with pea gravel excavated from the foundations. It was chosen because of its light pink coloring, and its soundness, weather resistance and durability. And it was right there.

Two difficult problems, underpinning an adjacent building and dewatering the area, were met during foundation excavation and construction of the basements.

The fourth basement of the hotel is 60 ft below street level. But ground water is just 30 ft below the street. And foundation material is a cemented Denver Formation, too hard for successful wellpoint penetration. Thus the basement area was surrounded with 30



HUNG CURTAIN WALL went up early to allow for plastic flow in supporting slab and for hanger adjustments.

ft of water during most of the excavation and basement construction.

As excavation extended below water level, the contractor built corner cofferdams, established sump areas and, to keep the area free of water, pumped over 2 mgd for a period of over two years.

The underpinning involved a heavy theatre next to the basement excavation. The contractor did the job without losing a bit of material from beneath its wall bearing foundations. He excavated inside the timber sheathing to bedrock, as much as 55 ft below street level. Then he constructed 4 ft by 5 ft concrete columns, or piers, spaced 5 ft c-c, to carry the theater.

To meet the construction schedule, the contractor had to complete a floor each week. This meant careful scheduling of the various trades, since heating and airconditioning ducts, and electrical runs all went in the slabs between upper and lower steel. Typical slabs were 12 in. thick flat plate construction.

On each floor, after they had formed an area, steel workers had to move in and out in a hurry, putting down bottom steel and moving on to the next section while mechanical trades came on deck. After the electrical and mechanical work was finished, steel workers came back to place top steel over the mechanical work in preparation for the concrete gangs.

Concrete was hoisted in three material towers and placed with six 13-cu-ft motorized buggies loaded from floor hoppers.

Normally, only one concrete bucket would be used per tower. But in this case the towers were made large enough to handle two 1½-cu-yd buckets side by side. With this arrangement, operators could hoist 70 cu yds of concrete per hour on each tower.

Actually, the contractor used two buckets in one tower and one in the other to concrete a typical floor. One floor covers 19,000 sq ft and took about 700 cu yd of concrete. The contractor placed 120 cu yd per hour.

The fast pouring schedule left ample time for finishing. This was especially important during the short days of last winter when workmen had to complete a 700-cu-yd pour in six hours in order to allow enough time for finishing before dark.

Despite Denver's cold weather last winter, this floor-per-week schedule was maintained. With canvas tarps hung around the floor being poured, warm air was forced through the ducts cast in the slabs for the permanent high-velocity air system.

Truck mixed concrete was used for the entire job—sometimes in such large quantities that it was furnished by two concrete companies using as many as 20 truck-mixers.

The core of the tower was designed as a structural spine to withstand wind loads on its 250-ft-high by 385-ft-long face. The core is a group of bearing walls that act vertically as a beam cantilevered vertically from the foundations up through the core area. The core contains the elevator shafts, service shafts, elevator lobbies and a pair of guest rooms on each floor.

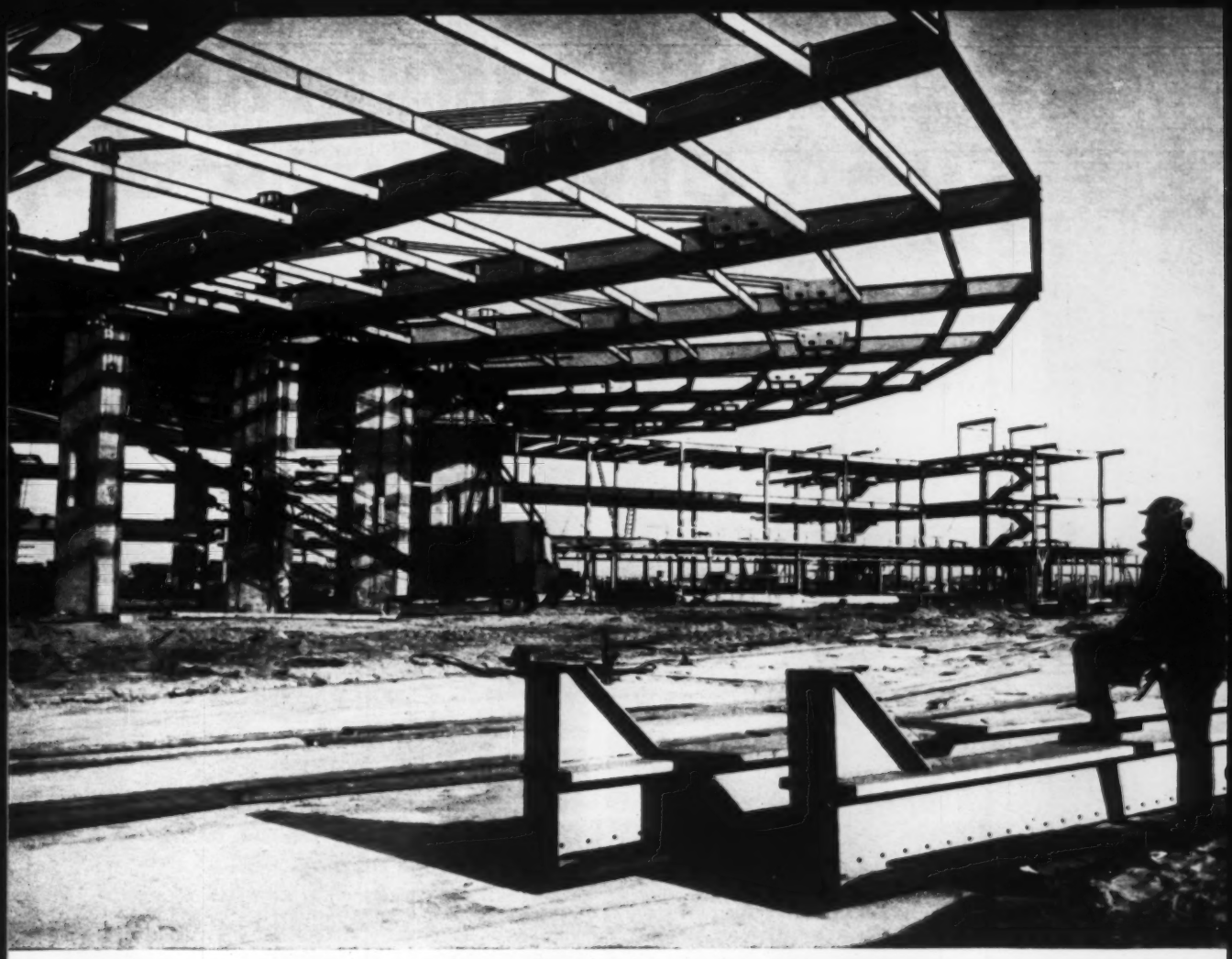
Wind stresses are transmitted horizontally through the floor slabs to this spine, which is anchored to a massive foundation keyed into a stratum of hardpan.

To one side of the hotel tower is the four-story department store. On the other side, the hotel extends out in a ballroom and office wing. The ballroom ceiling is carried by four heavy structural steel trusses spanning 80 ft across the 25-ft-high room. There's a floor of offices above the ballroom and a series of offices placed around the outside of the wing.

The entire Court House Square project is being constructed by Webb & Knapp Construction Corp.—a subsidiary of Webb & Knapp, Inc. T. J. Smith and J. E. Smith are project manager and assistant manager, respectively. G. Ellery Lapham is general superintendent and R. T. Schraeder is project engineer.

I. M. Pei & Associates are project architects. John LoPinto is resident architect. Associate architects are Charles Sink of Denver; and Rogers and Butler of New York City.

Consulting engineers are: Moran, Proctor, Mueser & Rutledge (Foundations); Weiskopf & Pickworth (Structural); Jaros, Baum & Bolles (Mechanical); and Smith & Silverman (electrical).



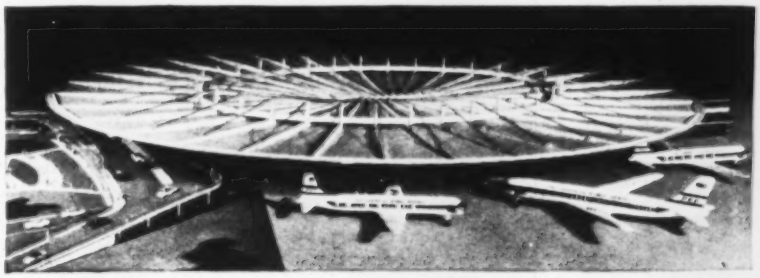
Steel umbrella large enough to cover Yankee Stadium

"The House that Ruth Built" could tear up its rain-checks if covered by a steel umbrella of this size. Instead of shielding the bleachers, however, this umbrella will protect Pan American jet passengers from the weather at New York International Airport.

With 4,000 tons of Bethlehem structural steel in its rugged framework, this $8 million, elliptical-shaped structure incorporates elements of suspension bridge design. The cantilever-supported canopy, to flow upward over the glass-enclosed building, will project 114 ft beyond the roof-supporting columns.

The canopy is suspended by thousands of feet of Bethlehem wire rope. Hundreds of tons of Bethlehem steel reinforcing bars are also being used in this modern terminal building.

Whether you're building dams or churches, highway bridges or shopping centers . . . our nearest sales office stands ready to give you full details on the many forms of Bethlehem steel for construction. Give us a call today. Or write us at Bethlehem, Pa.



Scale model of Pan American World Airways' new jet terminal at New York's International Airport. *Architects and Engineers:* Tippetts-Abbett-McCarthy-Stratton; *Associate Architects:* Ives, Turano and Gardner; *Fabricator:* Lehigh Structural Steel Co.; *Erector:* Lehigh Construction Co.; *General Contractor:* Turner Construction Co. Structural steel supplied by Bethlehem Steel.

BETHLEHEM STEEL

BETHLEHEM STEEL

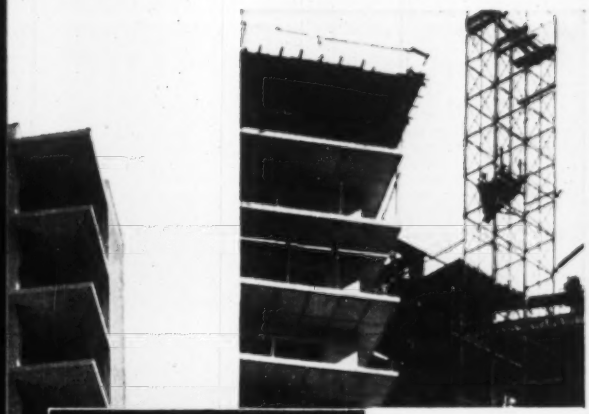
Phoenix Towers apartment demonstrates **Three of fir plywood**

PHOENIX TOWERS
LOCATION: Phoenix, Arizona
ARCHITECT: Ralph C. Harris, Chicago
CONTRACTOR:
Del E. Webb Construction Co.
Phoenix, Arizona

key advantages concrete form panels

—time and labor savings
—economy through re-use
—smooth concrete surfaces

Confirmed again on this 14-story cooperative apartment—the fact that fir plywood concrete forms offer advantages unmatched by any other material. In building Phoenix Towers, Del E. Webb Construction Co. used over 25,000 square feet of PlyForm and Overlaid fir plywood. F. L. McDowell, job superintendent, reports that form fabrication, stripping, and moving was fast and easy. Rubbing and finishing time was cut to a minimum due to the smooth architectural surfaces made possible by plywood. Phoenix Towers offers 60 luxury apartments in four wings, each planned to provide a maximum view of surrounding mountains and desert.



One floor was poured every two weeks, with plywood forms numbered and moved upward for each succeeding pour. Plywood was also used to form 120-car underground garage (left). Virtually no finishing was required before walls and ceilings were painted.

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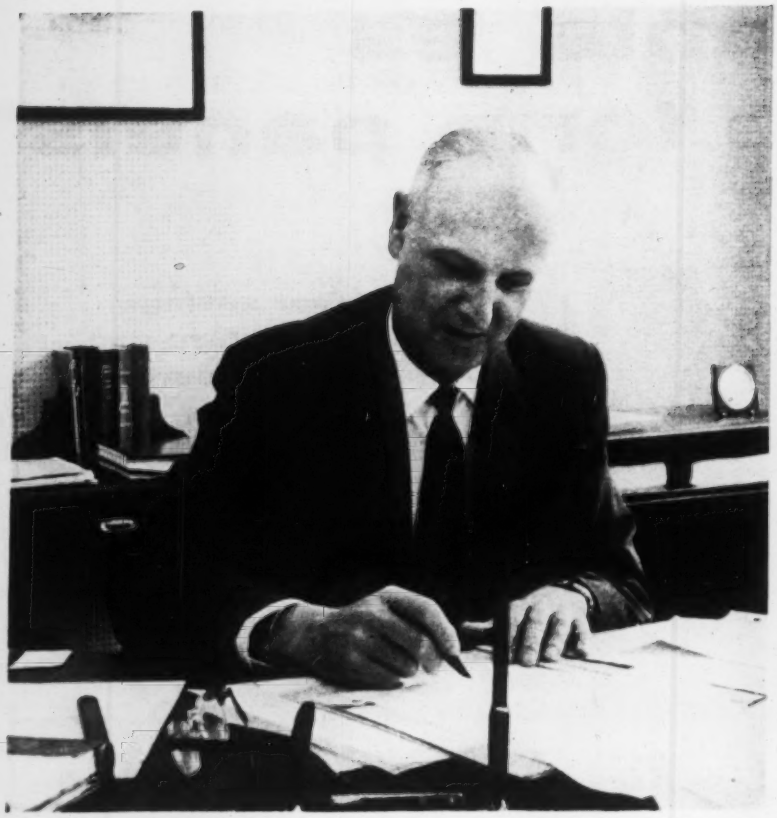

JEROME K. KUYKENDALL, FPC chairman, calls his engineering staff "the greatest group of power experts in the country."

FRANCIS ADAMS is chief engineer and head of the Bureau of Power.

FPC's Experts: They Have a Big

In the developing battle over the right to build High Mountain Sheep Dam and Reservoir (ENR Oct. 8, p. 26), the Federal Power Commission will find itself in a familiar spot—right in the middle.

The five man commission will, of course, eventually rule on the project. But first, an FPC examiner will handle the details of the case—perhaps even issue his own intermediate opinion.

A third segment of the commission—the engineering staff—may wield as much influence as the other two. During the course of the hearings, staff members will present their own recommendations for development of the Snake River. Such recommendations could back the plans of Pacific Northwest Power Co., suggest changes, or even urge that the project not be built at all.

Prominent on the FPC staff are a group of engineers working both in Washington and in field offices. These men are already acquainted with the Middle Snake River, where High Mountain Sheep Dam would be built. They have offered technical help to Pacific Northwest Power Co. in drawing up its application, and they will be available to give similar information to the commission itself when the case is decided. Their opinions, although not binding, carry great weight.

The FPC is no stranger to controversy. For the past 40 years it has been in and out of the great political and philosophic debates over use of natural resources: TVA, natural gas development, Hells Canyon Dam.

Made up of appointees of the administration in power, it has varied in complexion from a crusading body, dominated by public power zealot Leland Olds in the New Deal days, to a conservative, business-oriented body of the Eisenhower persuasion.

The commission holds forth in Washington, D. C., and regional offices around the country, policing and judging hydroelectric and natural-gas-pipeline programs in interstate commerce.

• **Like a court**—Decisions of the commission are, in final analysis, judicial ones, made in much the fashion of a court. Procedures are taken from the courtroom. Indeed, the governments description for the FPC and her regulatory cousins in Washington—the Civil Aeronautics Board, the Federal Communications Commission, the Interstate Commerce Commission and the like—is "quasi-judicial." Applicants are heard by commission examiners; both the government and the applicants present expert witnesses; and the commission then decides on the basis of the record.

The commission itself listens to testimony once the hearing examiner has made his recommendation for or against a proposed project.

• **Who are the experts?**—The hydroelectric experts the commission depends on most are the 135 civil and electrical engineers on the FPC payroll. What they say isn't law, but their reports on development of navigable streams pack a strong punch.

They compete for the ear of the FPC hearing examiner, and for the ear of the five-man commission itself. Their findings are determined by researching the

EDGAR T. HUGHES is chief of the Electrical Resources and Requirements Division. He's been with the commission since 1938.

FRANK L. WEAVER is chief of the River Basins Division. He's an ex-teacher and consultant.

WILLIAM R. FARLEY is chief of the Licensed Projects Division. He's a 21-year veteran.

MARION F. HETHERINGTON is Mr. Adams' assistant. Like his boss, he is a University of North Carolina graduate. He's been with the commission 24 years.

Say in Those Tough Decisions

archives of U. S. navigable waters, by fine-tooth evaluation of an applicant's specifications, by following the terms of the Federal Power Act—and on occasions specific acts of Congress—and by visiting dam sites.

The FPC has had the job of authorizing hydro construction on navigable streams since 1920, when it was created under the Federal Water Power Act. Actually, the Federal Government had been exercising such control since the late 19th Century by requiring some form of Congressional approval for each hydro project built across navigable waters in the U. S.

• **"Natural Gas Commission"**—The FPC has changed considerably in its responsibility since 1920. It was given the additional duty in 1938 of regulating interstate gas pipelines and natural gas producers involved in interstate commerce. Easily the bulk of the FPC staff—and engineers—are involved now in that work. "Actually, we ought to be called the 'Natural Gas Commission' now," says a member of the FPC staff.

The commission's present structure—aside from its added duties—took shape in 1940, when the Federal Water Power Act was amended. At that time a permanent five-man commission was set up, replacing the previous ex-officio commission, composed of the secretaries of War, Interior and Agriculture.

The Federal Power Act of 1935 continued almost exactly the provisions of the previous act, but charged the commission also with regulation of interstate transmission of power.

The Federal Power Act requires specifically that every licensed project will fit into the orderly, comprehensive and full development of the nation's water resources. It also gives preference to public agencies over private companies for hydro power licenses when proposed projects are in conflict.

• **Engineer's influence**—FPC staff engineers are required to report to the commission on every proposed license application brought before the agency. Though the engineers don't have ultimate life-and-death control over projects, they do have a powerful voice.

Almost all projects have plenty of leeway for differences in engineering opinions, and "it's usually possible to adjust a little bit here, a little bit there," says FPC general counsel Willard Catchell. This results usually in a compromise plan.

Two areas where compromises are few are safety structural designs and compatibility of a project with maximum development of the river basin involved.

Staff engineers' "veto" power, if any, comes usually in the very earliest planning stages, when they sit down with the applicant's engineers to discuss the proposed structures. The FPC engineers may recommend changes in the project, or they might propose an alternate plan.

They can initiate or propose modifications in projects on their own. For example, Duke Power Co.'s Saluda Dam in South Carolina was redesigned, at the engineers' request, for greater strength and a larger spillway. And Alabama Power Co.'s application to build a series of power and navigation projects on the Coosa River was revised heavily along lines drawn up by

. . . More jobs than staff to do them

the FPC engineering staff in Atlanta. In fact, the entire plan recommended to Congress by the Army Engineers was dumped in favor of the FPC staff plan for dams at new sites on the Coosa.

• **Cooperation pays off**—"Applicants don't have to work with us," says Francis L. Adams, chief of the FPC's Bureau of Power, "but it's to their advantage to do so." He emphasized that most of them do. It gives the FPC engineers a chance to familiarize themselves with the proposed project, thereby speeding their recommendations. And the staff engineers can work out their disagreements with the plan more easily ahead of time than later in formal hearings before an FPC presiding examiner.

Mr. Adams has instructed his five field officers to keep informed on all proposed projects and to cooperate with all applicants' engineers. Applicants who have filed either a preliminary permit or a license application can expect one of the FPC's engineers to appear on the site of the proposed project to make his own calculations. After the project has been authorized by the FPC, a staff engineer probably will be assigned to the site to make sure the project is being built as licensed.

• **New fields**—In addition to licensing new projects, the FPC has the authority—although not the manpower—to investigate existing unlicensed dams where the FPC may have jurisdiction. The commission also has begun another line of investigation neglected until a few years ago for lack of staff. The new investigations will determine "headwater benefit" values between two dams on the same river—where the downstream dam is able to increase its power output because of improved stream flow caused by the upstream reservoir. In this case, the FPC assesses the value of this added power generation and requires the downstream dam operator to pay a fee to the upstream dam operator.

• **Specific duties**—Staff engineers have the following specific duties:

• **Determining whether rivers, streams and lakes are "navigable"** according to federal definition, and whether proposed construction would affect navigation of these waters. Navigation means anything from rafts and canoes up to steamships, and the federal policy on navigation boils down to, "once navigable, always navigable." This gives the FPC jurisdiction over some rivers that have long ago lost their navigability. The engineering staff must delve into records to find out if the stream ever sustained navigation of any type. A stream bed nearly dry today could be ruled navigable if records showed that barges traveled on it a hundred years ago. Mr. Adams discounts a frequent charge that his engineers slant their studies to increase the number of FPC jurisdictions. He points out that in 211 cases where the commission has determined jurisdiction in regard to projects built between 1920 and 1958, only 76 projects—36%—were found to be under the commision's licensing requirements.

• **Working in the field with holders of preliminary permits to plan proposed projects** before license application. More than half FPC's power engineering staff is in five field offices: San Francisco, Fort Worth, Chicago, Atlanta and New York. Each has about 15 engineers, except San Francisco, which has 25. The San Francisco office handles all jobs in the Rocky Mountains and Pacific Coast states—about half the projects coming before the FPC.

• **Reviewing and making recommendations on license applications.** One special section of the Washington staff is a close-knit "project analysis" group, composed of four engineers who have worked together for years on safety and other design data for hydro power facilities. Most of the Washington staff, however, is involved in "processing" applications—reviewing requirements and handling paper work on these projects.

In the uncontested 90% of all applications, the staff engineers in conjunction with the FPC legal office prepare a report on the proposed project giving their recommendations. In the other 10%, where opposition develops, a different procedure is followed.

The need for hearings on controversial projects usually becomes evident within a few months after the application has been filed. At that time the engineers working on the application "insulate themselves" from the rest of the commission staff, says Mr. Adams, and they begin working on possible issues in the controversy. Their opinions will be presented before the presiding FPC examiner in exactly the same manner as testimony from the applicant and any intervenors.

• **Not many rookies**—The average FPC engineer is 52 years old, has had from 10 to 30 years' engineering experience and is paid about $10,000. He most likely came to the commission in the 1930's under President Franklin D. Roosevelt, and he probably came from another engineering post, either with a private or a public group. (Very few FPC engineers have come straight from college.) The odds are three out of five that he is a civil engineer; otherwise, he is an electrical engineer.

FPC chairman Jerome K. Kuykendall

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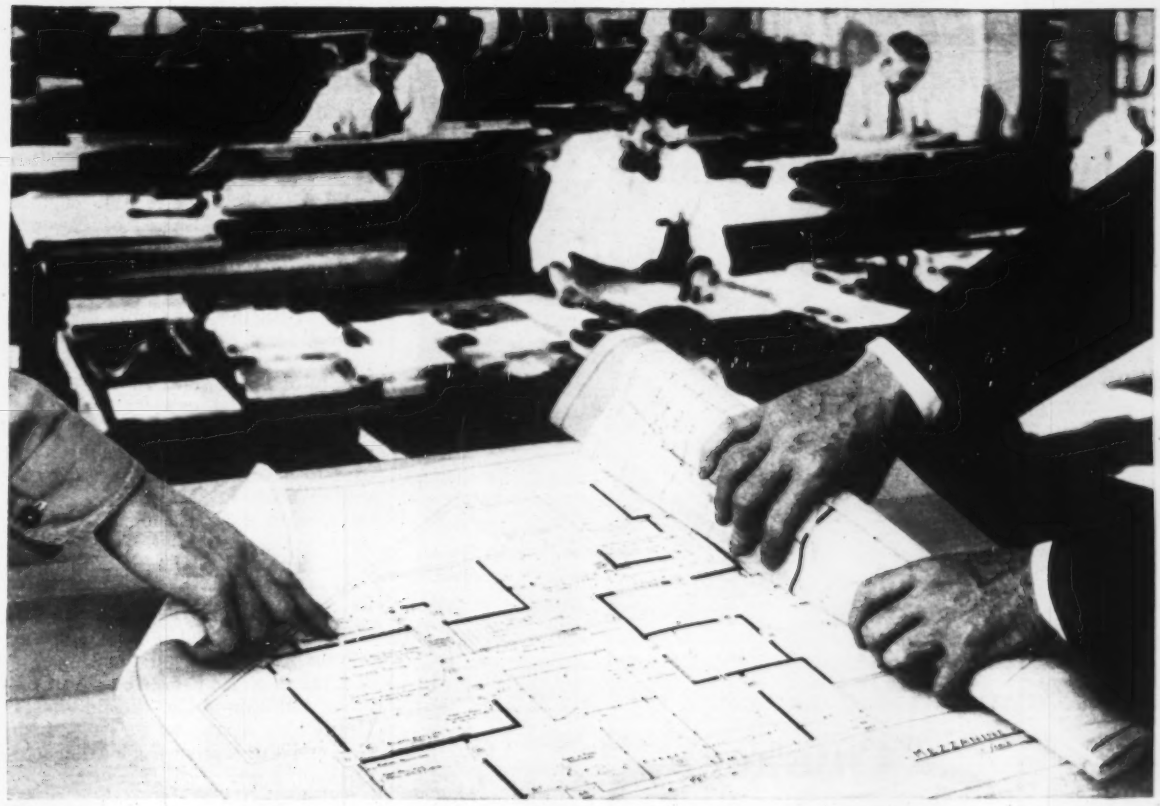

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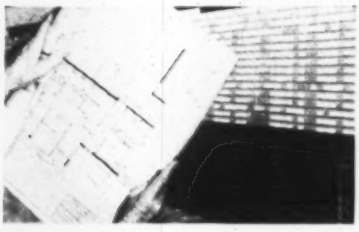

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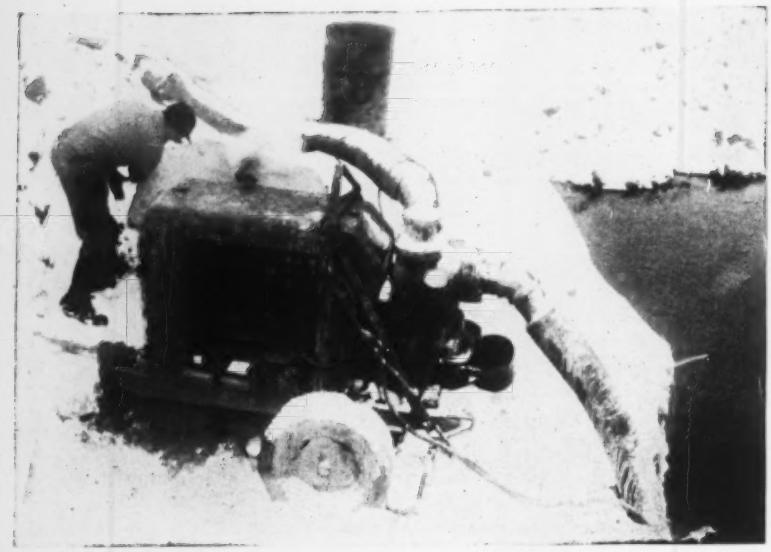

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Ask your Thermoid distributor about Thermoid-Quaker water-suction hose (1½" to 4" ID, 50-foot maximum lengths). Or write to *Thermoid Division, H. K. Porter Company, Inc., Tacony & Comly Streets, Philadelphia 24, Pa.*

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. . . No rookies here

calls his staff engineers the "greatest group of power experts in the country." Because of legal, political or other considerations, the commission does not always go along with them. But on strictly engineering matters, they have great influence. Among the key staffers:

Francis Adams, chief FPC engineer and head of the Bureau of Power, is 52. He has engineering degrees from the University of North Carolina and MIT. He was a structural designer for Stone & Webster Engineering Corp., Boston, in 1929-31, and has been with the FPC since 1934. He has been chief of the Bureau of Power since 1951.

Marion F. Hetherington, 50, Adams' assistant, has been with the FPC for 24 years. He is also a UNC graduate. He used to have his own engineering consulting office in Danville, Va., was a member of the Biltmore Estate Co. (homebuilders) in Asheville, N. C., and served with the Southern Railroad.

William R. Farley, 61, chief of the licensed projects division, has been with the FPC 21 years. He has engineering degrees from MIT and the University of California. He has served with Commonwealth Edison Co., the old Phoenix Utility Co., Minnesota Power & Light Co., and the Hussey Engineering Co., Oakland, Calif.

Frank L. Weaver, 69, chief of the river basin division, graduated from the University of Michigan; served with the Army Engineers in World War I; taught engineering at Johns Hopkins and Oklahoma Universities; served as city engineer for Wyandotte, Mich.; and worked for engineering firms in Detroit and Ann Arbor. He also was employed by Hubbell, Hartgering & Roth, Detroit engineering consultants.

Edgar T. Hughes, 59, chief of the electrical resources and requirements division, graduated from Pennsylvania State College. He was an engineer for the Phoenix Utility Co. and the Pennsylvania Power & Light Co. before coming to the commission in 1938.

• **There used to be more**—During the New Deal days, the number of commisssion engineers was much larger to handle several nation-wide power studies. The older ones have left since then, but few men have come in to replace them. In fact, until the last few years hardly a new engineer had joined the staff for 10 or 15 years. This makes for a sizable age gap between the old-timers and the newcomers. Chief Engineer Adams attributes the commission's ability to get new men in the last few years to the 10% pay increases granted federal employees in 1958 and to the recent recession, which made non-government jobs harder to come by.

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Nine years ago, American Steel & Wire Division introduced a *fatigue-resistant* Tiger Brand Wire Rope Boom Support Assembly. It was designed to combat the severe vibration on power shovels, draglines and cranes. Since then, it has been installed on thousands of machines with outstanding success.

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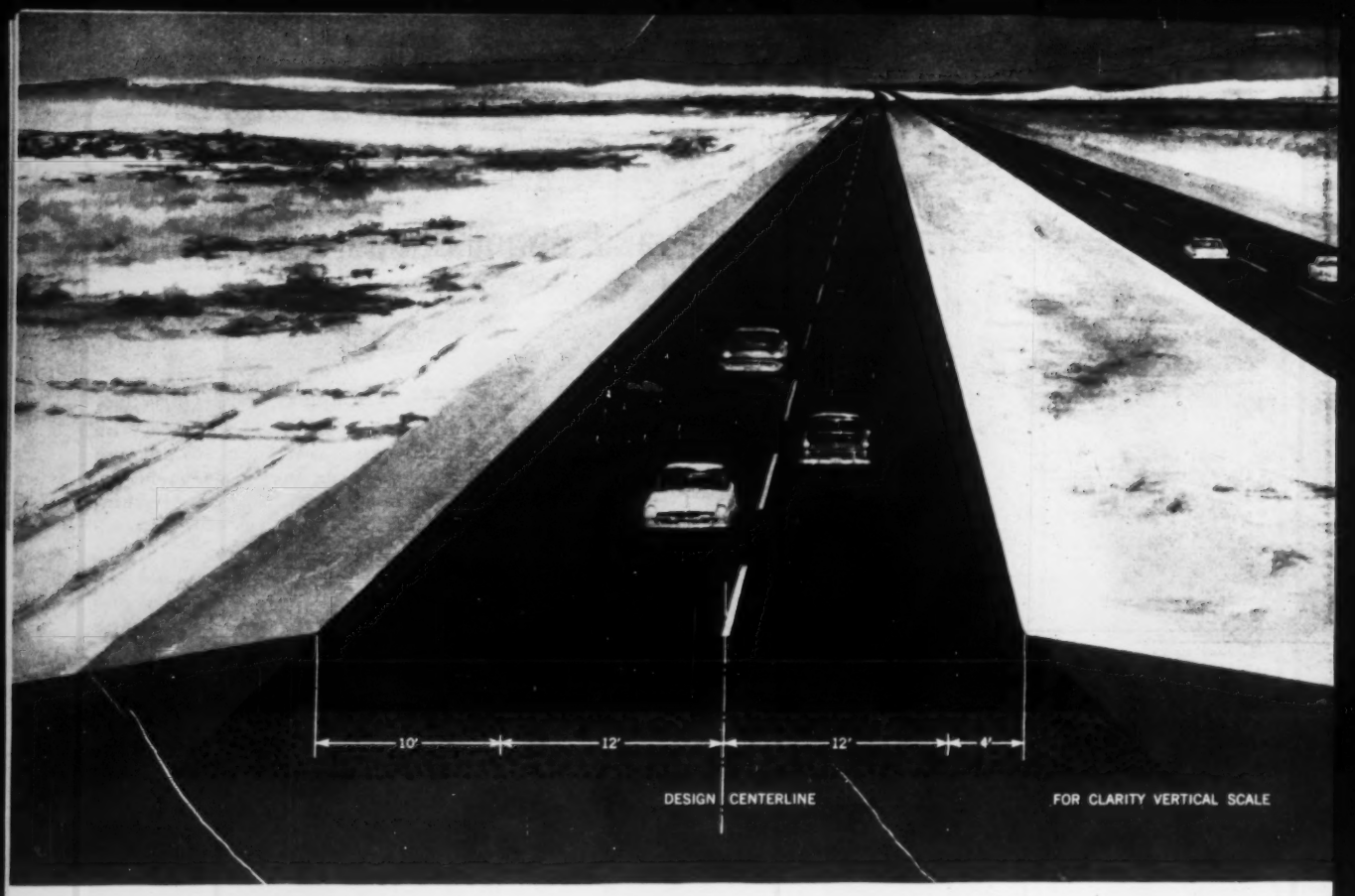

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Arizona is a big state with a low population density—which means it needs plenty of roads. But there aren't millions of Arizonans to pay for them. Every dollar counts.

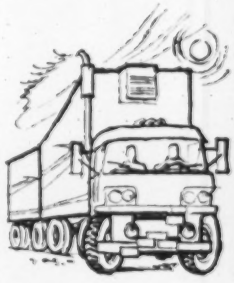
These are some of the reasons why most of Arizona's roads traditionally have been of economical Asphalt construction. Time and again, since the State began to pave, Asphalt pavements have stretched available funds over more and more of these long Arizona miles than could any other pavement type.

Now, along with the rest of the states, Arizona has launched a vast new road-building program. And even though more federal aid is available than ever before, these roads, too, are turning out to be Asphalt-paved. You don't have to look far for the reasons.

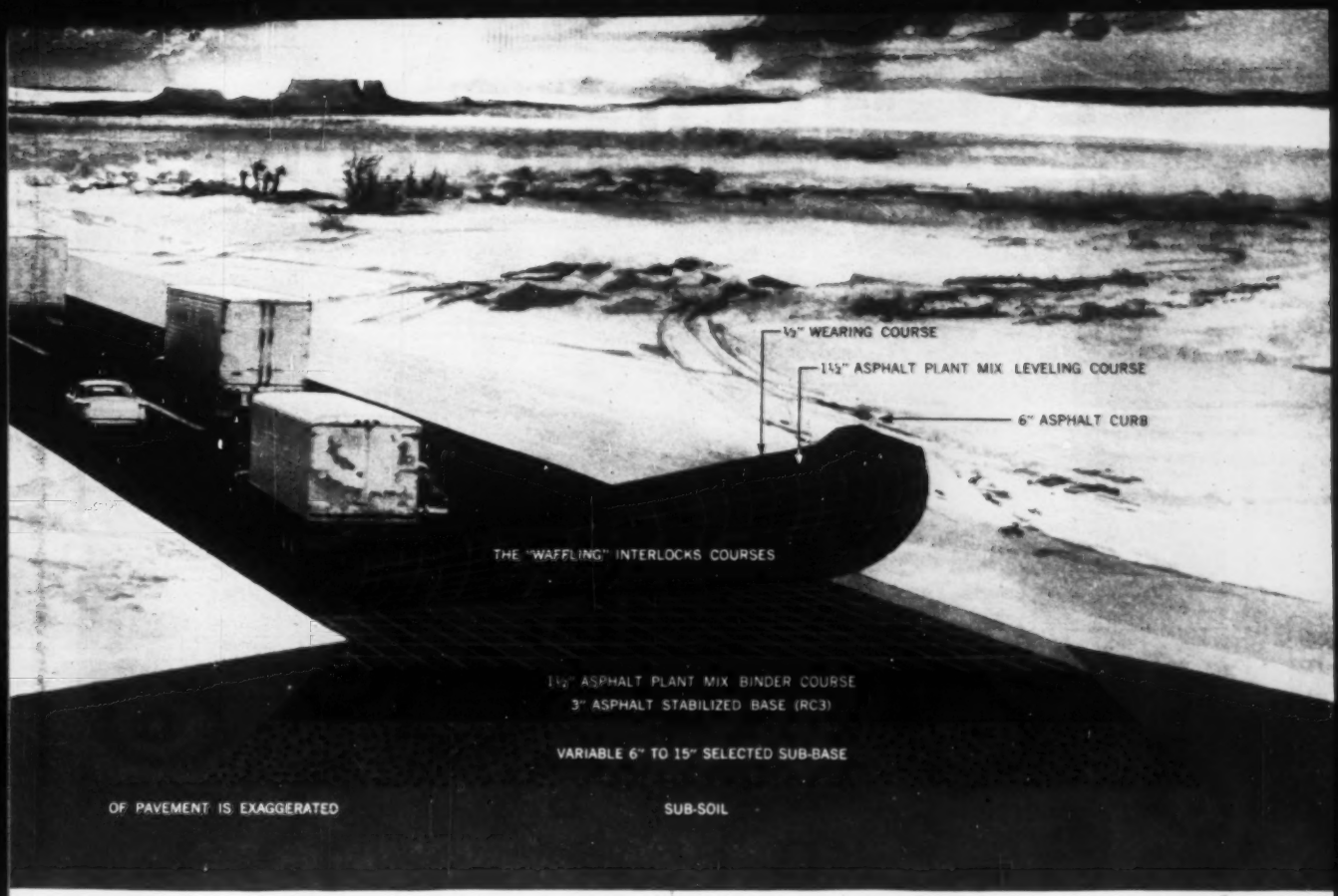
Arizona's veteran Asphalt-paved highways have proved themselves as rugged and durable as they were economical to build and maintain.

U.S. Route 66 between Winslow and Holbrook is an example. First paved more than 25 years ago (with Asphalt and sand!), this pavement is successfully supporting heavy traffic undreamed of when it was first built. "Double" trucks by the dozen barrel over it at 60 MPH. So does the bulk of Arizona's east-west traffic.

Now this veteran main artery, still in the prime of its life, is being given local traffic responsibilities. A new divided Interstate Highway (Route 40), carrying through traffic, will parallel it. The initial section of Arizona's new Interstate 40 is shown above. It is a 5.6 mile stretch between Winslow and Holbrook.



With no aggregate larger than ¾ inch available (and most under ¼ inch), only Asphalt construction could have been used to build this section of pavement up to Interstate standards. Total cost of the pavement structure was $1.75 per square yard!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The cross section above shows you in detail how low-cost Asphalt materials were used to give this pavement lasting strength despite the scarcity of aggregate.

Notice, first, the use of Asphalt in the 3-inch base. This base, a sandy gravel, was road-mixed on the selected sub-base using RC-3 liquid asphalt.

Notice, second, (see right roadway above) that the 3-inch binder and leveling course was asphalt plant mix laid down in two courses. A novel between-course interlock was provided by "waffling" the lower course while still hot with a 4-inch square grid pattern, impressed about ⅜-inch into the surface. A tack coat was applied and a second course constructed. Then, a ½-inch wearing course was laid to insure a non-skid surface.

Notice, third, that both base and surface courses are uniform across the whole width of the road, shoulders as well as traffic lanes.

Notice, fourth, the use of Asphalt curb to provide controlled drainage, prevent embankment erosion and aid safety.

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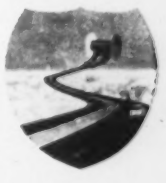

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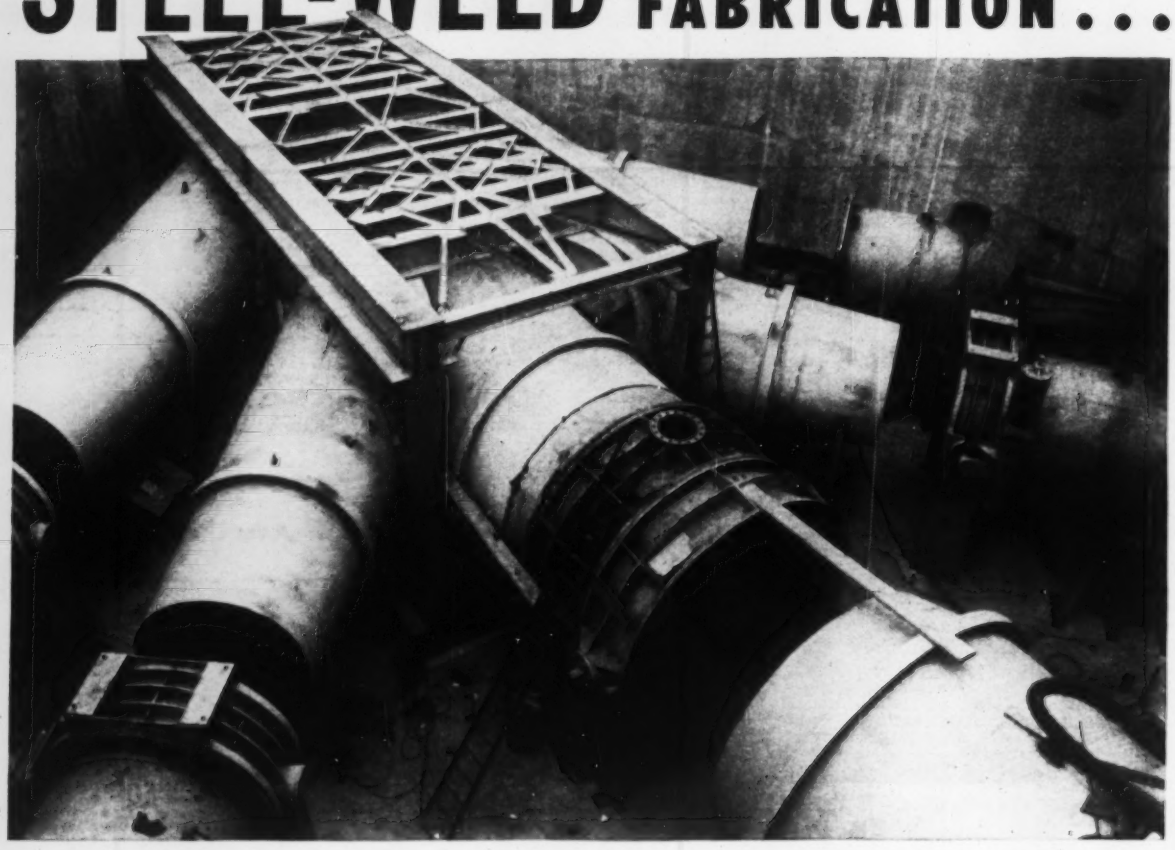

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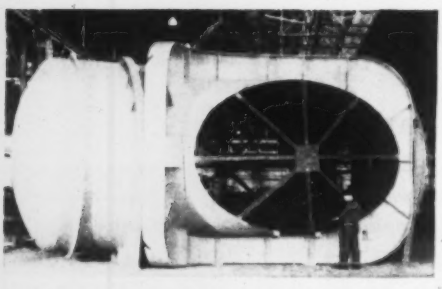

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Above you see a 16 Ft. Dia. Raw Water Main and Header Unit with four Feeder Ducts installed in one of the Booster Pumping Stations of a large city's water supply system. Operating pressure is 50 psi. All components, including the heavy, laterally braced reinforcing and stabilizing frame, were fabricated to specification by Mahon.

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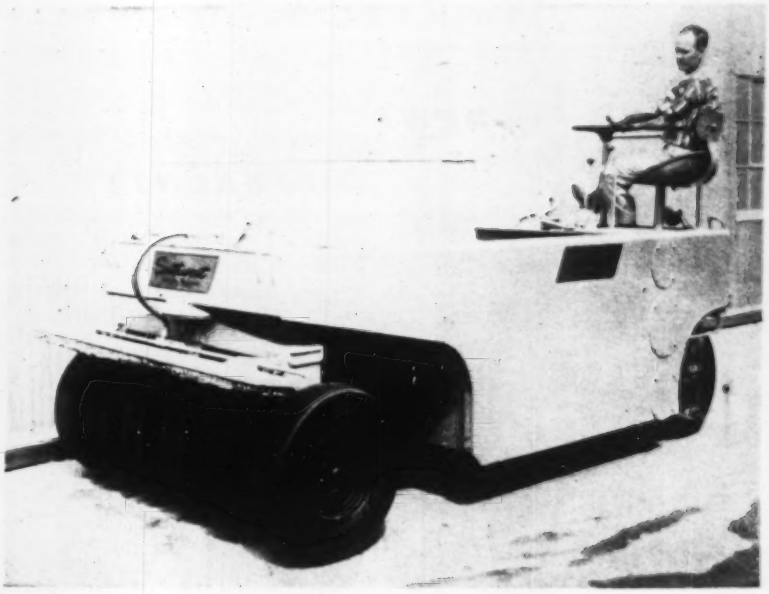

Compactor Rolls 84 Inches

Southwest offers the VP-11 as an improved version of its self-propelled pneumatic roller for highway construction.

Water tank capacity has been increased to 100 gal. All wheels are uniformly cleaned by coco mat brushes hydraulically controlled from the operator's seat.

The VP-11 has vertically oscillating rear wheels and a rolling width of 84 in. A dished-type fifth wheel in the front bolster is for stability and strength.

Single-lever control and full-swivel seat aim at simple operation in both forward and reverse. Unit comes with open ballast box. Lighting system is available. Southwest Welding & Mfg. Div., Yuba Consolidated Industries, Inc., 351 California St., San Francisco 4, Calif.

Steady Legs for Off-Shore Rigs

Long-legged drilling platforms for off-shore work can upset unless a continuous watch is kept for uneven settlement of the platform supports. But now a Texas firm has made up a safety device to provide round-the-clock protection against just this danger.

It not only sounds an alarm if the huge drilling platform goes out of level, but starts and stops the electric motors that regularly raise and lower the platform's leg supports.

R. G. LeTourneau, Inc., of Longview, Tex. has delivered nine of the three-leg "portable platforms" for which the new safety device is designed. These can run from $1 million to $4 million each and some have weighed up to 4,000 tons.

Pendulums—one for each leg—operate the device. If the ocean floor begins to scour or settle beneath a leg, the pendulum facing that leg swings out, closing a photo-electric circuit. That sets off a relay, which blows a warning horn and starts up the same electric motors that raise and lower the platform at that particular leg.

Available for installation on all future LeTourneau platforms, the safety device may be added to any of the other platforms already built by the company. R. G. LeTourneau, Inc., 2399 South MacArthur, Longview, Texas.

Semi-Tilt Trailer Takes on 22-Ton Rigs

The OTS semi-tilt trailer is designed for fast, safe loading of construction equipment.

The 22-ton-capacity carrier has a low, flat, over-the-wheels platform that pivots near the rear wheels. Tilting section comes 8 ft wide and either 16 ft or 20 ft long.

Standard equipment includes air or vacuum brakes on all wheels and three hydraulic tilt cylinders. Miller Tilt-Top Trailer, Inc., 467 S. 92nd St., Milwaukee 14, Wis.

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ALL SIZES! Tapered, adjustable, long-span, waffle, or cored slab, Jay-Pans give a clean job . . . come in all standard sizes as well as practically any other size you need to fit your most economical module.

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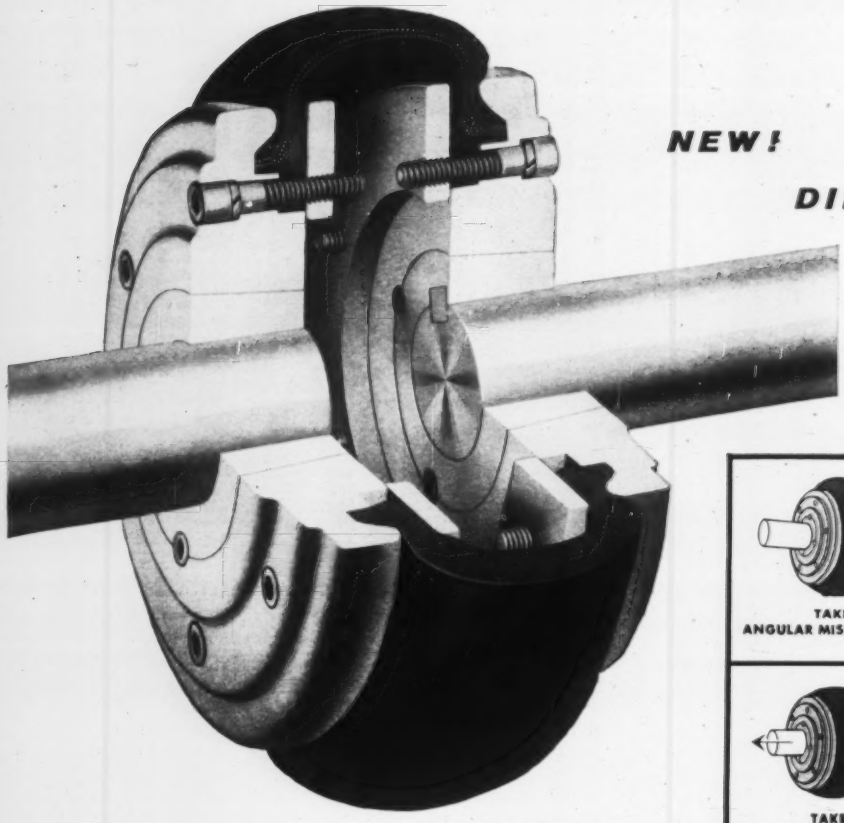

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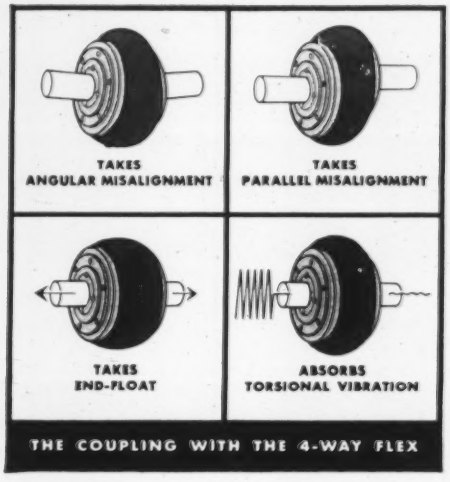
DIFFERENT!



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FLEXIBLE CUSHION COUPLING

THIS coupling "swallows up" shaft misplacements. It automatically compensates for end-float, parallel misalignment, angular misalignment *or any combination of all three.* Moreover, it cushions the stresses of shock loads. And it absorbs torsional vibration—reducing noise and protecting machinery from vibration's destructive forces.

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Para-flex takes minimum space on the shaft. Mounting is simplified through the use of standard Taper-Lock bushings—no reboring, no machining. Safety is promoted by flush design; there are no protruding parts. No lubrication is required, no periodic inspection. And since the flexible member is molded with a transverse split, it can be replaced *without moving either the driver or driven machine.*

Para-flex Couplings are stocked by Dodge Distributors in popular transmission sizes. They are available from factory stock in capacities up to 825 hp at 1200 rpm. Call your distributor for early delivery to *make your own test.* You'll witness something revolutionary!

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Men and Jobs

David H. Stevens, AASHO's new president, is . . .

A Man Who Gets Things Done

David H. Stevens, new president of the American Association of State Highway Officials, is known as one of the ablest and most versatile administrators in Maine state government.

Now chairman and administrator of the State Highway Commission, Mr. Stevens previously held the unrelated posts of commissioner of health and welfare and state tax assessor.

During his administration of these sometimes touchy races, he has established a reputation for getting things done—honestly, without politics and with a minimum of red tape.

He has gained respect and admiration through sheer ability and devotion to the public interest. For the tall, balding, broad-featured man is impatient, outspoken, often undiplomatic. He has a low boiling point. And he has frequently been the center of public controversy.

At 52, Mr. Stevens has seen 27 years of government service, starting as a town manager. Although primarily an administrator, he has background for the specialized work of the highway department including, a civil engineering degree from the University of Maine (1928) and three years with the engineering division of the New York Telephone Co.

From his long public service experience, Mr. Stevens warns that the expanded federal-aid highway program poses a challenge to government officials to inform both legislators and the public.

Any governmental program will progress "only as fast as public acceptance is obtained" for it, he points out. "Until the need is clearly demonstrated, not only to legislative bodies but also to the motorist who will be the beneficiary of these highway construction programs, we cannot expect to obtain and retain such acceptance to the degree that will be necesary if the Interstate Highway Program is to be constructed as contemplated under the original federal legislation."

Mr. Stevens foresees that the recent controversy at the federal level over financing "will become more pronounced as requirements become evident at the state level."

"It will be interesting to observe," he says, "whether or not the present machinery, namely the partnership of many years' standing between the federal government and the states, will be capable of making the necessary adjustments to demonstrate need to the legislative bodies at the federal and state levels and also, and more important, to the citizens of this country."

Mr. Stevens had been state tax assessor five years when he was tapped in 1947 to take over direction of the health and welfare department, which had been turned inside out by a legislative investigation.

Many civic leaders opposed the appointment because Mr. Stevens had little training in the welfare field. His strict administration of new welfare laws provoked additional criticism.

But he learned the welfare business, built the department up from a low point in morale, and eventually won the respect of his former critics.

So striking was his success that, when the legislature in 1954 made the state highway commission chairman a full-time administrator with a seven-year term, Gov. Burton M. Cross named Mr. Stevens to the post.

Mr. Stevens found the commission's program overextended by nearly $2 million beyond budget allocations and unbalanced by purely state projects, while federal funds had gone unused.

He put on the brakes and suspended a number of scheduled projects, and was greeted with howls from some sections of the state. Local politicians, accustomed to getting a hopeful "maybe" from the commission, suddenly found they were getting a blunt

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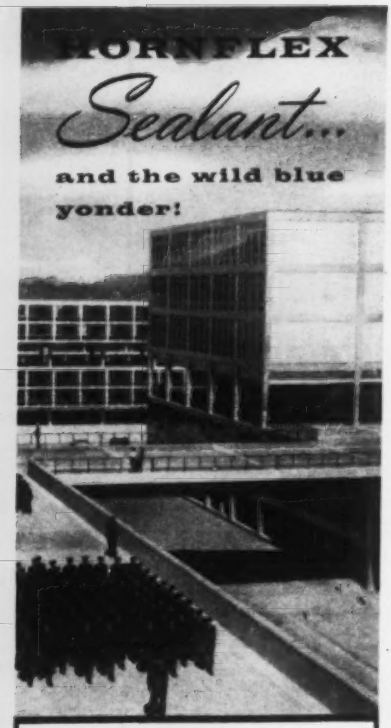

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PHOTOS: U. S. AIR FORCE

"no." Later, the commission established a "sufficiency" rating system to determine priorities on construction projects.

By the time the expanded federal program came along in 1956, the highway commission had been put on a firm accounting basis and extensively reorganized, so that it was ready to double its major construction program, and the legislature was ready to provide the matching funds.

A measure of Mr. Stevens' administration was the fact that he got along well with Edmund S. Muskie, who became the first Democrat to be elected governor of Maine in 20 years. Except for the reclassification of roads, Governor Muskie endorsed the highway commission policies. Nor has Mr. Stevens had any disagreements with the present Democratic governor, Clinton A. Clauson.

In 1957 and 1958 Mr. Stevens was forced to defend his programming of Interstate construction against sustained attacks, mostly from Northern Maine legislators, who wanted higher priority for their section. But "Dave" Stevens had learned some of the arts of diplomacy in the hard school of public controversy. He won the backing of a majority of legislators by his patient and detailed explanations of the commission's program and public policy.

When the 1959 legislature hired an outside consulting firm to make a pilot study, aimed at cutting costs, it found only two small areas of highway operations in need of improvement, neither of them involving savings.

A hard driver, who tends to worry a problem until it is solved, Mr. Stevens is becoming more philosophical. In the midst of the crisis over federal highway financing in August, he remarked to a visitor that he had been through a lot of crises. At the time, he said, they all seemed the worst he had ever been in, but somehow they had all worked out, and he guessed that this one would, too.

In addition to his service as first vice president of AASHO the past year, he is a member of the Board of Directors of the Association of Highway Officials of the North Atlantic States, chairman of the Maine-New Hampshire Interstate Bridge Authority, member of the Maine Turnpike Authority and a member of the Maine Good Roads Association. He is a past president of the New England Association of State Tax Officials and the Maine Municipal Association; and a former member of the Executive Committee of the National Association of Tax Administrators.

Wyoming Highway Officials Take Top Posts in Alaska

Two top engineers have resigned from the Wyoming Highway Department to work for the Alaska Highway Department.

Thurman D. Sherard is Alaska's new highway director, leaving his post as Wyoming deputy engineer and secretary of the state highway commission.

Al G. Gardner takes over as Mr. Sherard's deputy highway director in Juneau after serving as Wyoming's assistant highway engineer.

Mr. Sherard, who worked on the Alcan highway during World War II, joined the Wyoming department 23 years ago. He has been commission secretary since 1950 and deputy engineer since 1956.

Last January Mr. Gardner, who has been with the state 33 years, took over the newly created post of assistant state engineer. He coordinated all the technical and engineering phases of the highway program. Before that he was coordinating engineer and assistant construction engineer. During the early years of his career he was district engineer at Basin and Cheyenne.

Careers

Retirements

E. G. Nielson has retired as associate chief engineer in the bureau of reclamation's Denver office. He was with the bureau for 25 years.

Ray B. McMinn, bridge engineer for the bureau of public roads in Portland, Ore., has retired after 40 years of service. He was involved in the design and construction of such structures as the floating bridge across Lake Washington, the Blue Creek Bay Bridge near Coeur D'Alene, Idaho, the Narrows Bridge at Tacoma, Wash., and the Turnagain Arm Bridge in Alaska.

Fred M. Yellott retired as resident engineer for the Virginia Department of Highways.

C. Arnold Dutton, vice-president of the Buffalo Electric Co., Inc., Buffalo, retired. Supervising construction sales, he worked on the St. Lawrence Seaway and Niagara power projects. He had also been national director of the National Society of Professional Engineers.

M. E. Beatty, engineer, retired after 38 years with the North Carolina Highway Department.

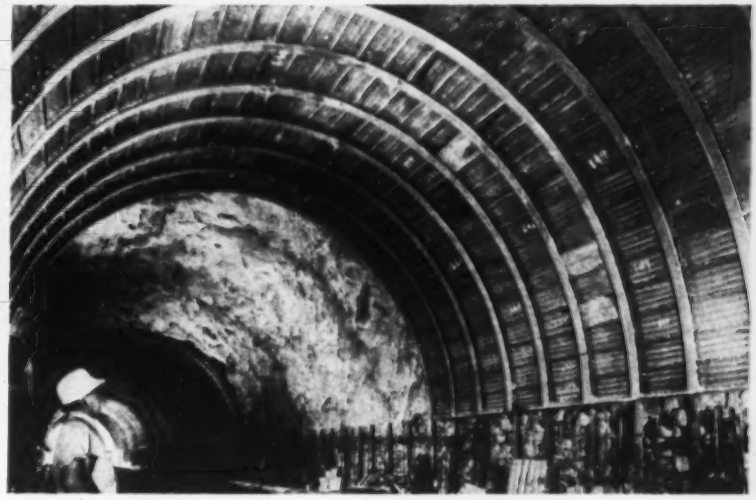
F. M. Edgerton retired as district engineer for the North Carolina Highway Department.

Clifton W. Lewis, road maintenance supervisor, retired from North Carolina Highway Department, Wilson, N. C.

(Men and Jobs continued p. 58)

TUNNEL PORTAL for two-lane vehicular traffic through mountainous San Gabriel Canyon.

INSIDE FLANGES of liner plates are bolted to the web of arch ribs. Erection of components is fast; fit is certain; and joining with quick-acting, coarse threaded bolts is positive and rapid.



"SAFETY FOR TRAFFIC" is spelled out in extra strength of COMMERCIAL's tunnel support system. Note: Posts set in unsupported roof section to receive future arch support as conditions may require.

How to Support Rock Tunnels in Earthquake Area

A major 10-tunnel highway project through a 6500 ft. mountainous terrain will soon speed up shipment of products from Antelope Valley to the nearby, fast growing Los Angeles market. Highway authorities have noted that motorists driving through those tunnels already completed in this frequently earth tremored area have a sense of safety reassurance due to the solid protective appearance of the exposed steel tunnel support system.

To keep the project rolling on schedule, the Los Angeles County Highway Department has specified COMMERCIAL steel ribs and liner plates. They know from past experience on other tunnel projects that all fabricated parts—ribs, liner plates, wall beams, posts and bolts—arrive on the job accurately fabricated to quickly "button up" the COMMERCIAL tunnel support system.

Fast erection of the steel supports in sections of the new 34 ft. wide, 2-lane tunnels is mighty important, too. Arch ribs and plates, sized for easy handling, are raised by a cable sling on a power shovel and set by crews working from a drilling jumbo. Two-piece arch ribs are placed with staggered joints at the crown. Liner plates have corrugations to give them added strength for lagging and their continuous inside flanges are bolted to the web of the ribs . . . spaced on 3 ft. centers.

Back-packing is placed to fill all voids between the excavated rock and the liner plate lagging. Then grouting is pumped to fill all small voids in the back-packing. Thus, uniform loading is placed on the entire arch.

The full advantages of any COMMERCIAL tunnel support system start with COMMERCIAL's engineering assistance. With 35 years experience, they may well be able to help you speed up and simplify your next tunnel job, whether vertical, surface, sub-surface, soft or hard ground. For complete details, please write to Commercial Shearing & Stamping Company, Dept. E-43 Youngstown 1, Ohio.

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Adaptability to all sorts of mechanical situations explains, in large measure, the wide-spread use of TRU-LAY PUSH-PULLS on tractors and their accessories, power shovels, winches, road graders, road oilers, dump trucks, snow plows, engine-driven pumps, rock crushers and other construction equipment.

These dependable Push-Pulls are used for the remote control of hydraulic and air valves, brakes, clutches, transmissions, throttles, chokes, governors, power take-offs, and many other applications.

TRU-LAY PUSH-PULLS are precision products, not gadgets. They provide positive remote-action whether anchorages are fixed or movable . . . for light loads or loads up to 1,000 lbs. . . . and they are effective over short or long distances, up to 150 feet or more.

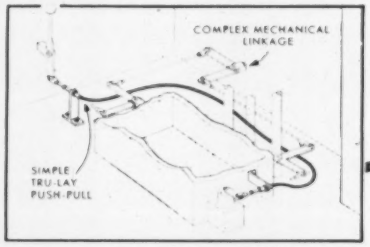
TRU-LAY PUSH-PULLS are dependable and accurate even under the most adverse conditions

They perform effectively under extremes of heat or cold . . . from jet engine temperatures to 70° below zero F. The inner, working member (lubricated for life during assembly) is fully protected by the tough, flexible conduit. Abrasive dusts, dirt and moisture are sealed out. Fittings are cold-swaged to make them integral parts of the control unit. It is a matter of record that we have never heard of a TRU-LAY *flexible* PUSH-PULL wearing out in normal service. Use of these versatile, simple and rugged controls increases ease of operation and means the virtual elimination of maintenance.

Advantages of Tru-Lay Push-Pull flexibility and simplicity are pictured below

Simplicity vs Complexity

Compare the TRU-LAY PUSH-PULL cable in illustration with the mechanical linkage. PUSH-PULLS are simple, have but one moving part, are noiseless and give lifetime service accuracy. Linkages are complex, made of many parts; they wear at many points. Their use brings increased backlash, lost accuracy and vibration rattles.



"Solid as a rod but *flexible* as a wire rope" is a good description of TRU-LAY PUSH-PULL REMOTE CONTROLS. This flexibility makes it possible to snake around obstructions . . . permits the ideal arrangement of all control elements . . . greatly simplifies installation of controls by reducing the number of working parts . . . damps out noise and vibration. Versatile, accurate, adaptable, rugged . . . they are the ideal remote controls for construction equipment.

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. . . Men and Jobs

Paul Zeese, a 27-year veteran with the Corps of Engineers, retired. He supervised the operation and maintenance of the locks and dams on the upper Mississippi river.

Ben L. Peterson retired as chief of the engineering division of the Portland district, Corps of Engineers.

H. S. Morse, chairman of the board of the Indianapolis Water Co., retired after 34 years. He will remain a member of the board of directors.

J. A. Young, district engineer for the Northern Pacific Railroad, Seattle, retired after 42 years service.

Public Works

Bernard W. Booker, retired Oakland, Calif., assistant state highway engineer for the nine bay area counties, has been named consultant to the Alameda-Contra Costa Transit District, Calif.

Franklin O. Kugel, a veteran of 33 years with the state of Ohio, has been appointed chief engineer of the Ohio Department of Natural Resources. **John R. Hyland** takes over Mr. Kugel's former position as chief of the soil erosion division.

Col. Steven Malevich, who has been U. S. Engineer serving in Europe, has been transferred to the Huntington, W. Va. district. He succeeds **Col. H. J. Skidmore** who has been assigned to Fort Belvoir, Va.

Charles E. Woodward is the new director of the Portland Planning Commission after serving as assistant director of the Oakland Calif. planning body.

Nick K. Snowden has been transferred to the Kentucky State Department of Highway's central office in Frankfort. He had been office manager of the Lexington highway district.

John J. Hedderman takes over as project manager of the United States Bureau of Reclamation's new office in Provo, Utah. **Parley R. Neeley** is the chief of engineering. The new office directs all planning and construction in central Utah.

Thomas E. Stanton has been named Cleveland water commissioner after 22 years service with the Cleveland Water Department.

Herman Nelson, former Alabama state highway director, is Lawrence County, Ala., engineer.

John F. Yeager, right-of-way appraiser for the Utah Division of the U. S. Bureau of Public Roads, takes on a similar post with the Texas Division at Austin, Tex.

Herbert C. Gee, retired army officer and head of a West Palm Beach, Fla. engineering firm, has been appointed consultant to the Senate Select Committee on National Water Resources.

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How minutes make a difference in your costs of workmen's compensation

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Speed is essential. Working out of 105 claims offices linked by teletype, Liberty claimsmen act fast to make certain an injured worker receives proper care and treatment. Medical specialists are rushed to the local hospital when severe injury requires it. A rehabilitation nurse begins her liaison among patient, doctor, patient's family and policyholder to plan a recovery program. Meanwhile, detailed claims investigation is started while the facts are fresh. Saving valuable minutes can save a life or a limb and also save compensation premium.

Fast, efficient claims medical services are only a part of Liberty's protection in depth. This advanced concept in business insurance also includes an occupational medical program and two rehabilitation centers to handle industrial accidents. A scientific research center tackles policyholder accident and loss problems, while 448 full-time safety engineers work to stop accidents before they happen.

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Water pipeline is carried over river on . . .

Suspension Bridge in Washington

Difficult dewatering conditions, due to the proximity of the piers to the water's edge, complicated construction of this suspension bridge carrying a 20 in. water line over the Skagit River near Sedro Woolley, Wash. The bridge was completed in December, 1958. The Skagit County Public Utility District No. 1 awarded the $143,788 job to Croy Construction Co., Bellingham, Wash., on a low bid 4% under the engineer's estimate. R. W. Beck & Asso., Seattle, was the consultant.

The project is an extension of the county's major water distribution system. Suspended span of main bridge is 475 ft, and two side spans are 158 ft each, for a total length of 791 ft. Main span sag is 48 ft. The tallest pier is 51.5 ft high, the galvanized steel towers, 60 ft. Span of wind trusses is 71 ft. There are two main cables of 1⅛ in. bridge strand, and two wind cables of 1⅜ in. bridge strand. The 20 in. dia coal-tar-enamel-lined steel pipe is ⅜ in. gauge, with bolted flanged joints.

Approximately 100 cu yd of tremie concrete was required for the piers. Concrete specifications for piers was a compressive strength of not less than 3,000 psi and a water content not in excess of 6 gal per sack of cement.

Prevailing union wages included: carpenter $3.13; crane & shovel operators $3.63; structural iron workers $3.40; common laborer $2.70.

1C	Croy Constr. Co., Bellingham, Wash	$143,788
2	Dale M. Madden Constr. Co., Seattle	152,979
14	Barker B-E-C-K, Seattle	274,024
EE	R. W. Beck and Asso., Seattle	150,500

Bids: 6-2-58		Quan-	Unit Prices	
Items	Unit	tity	1C	2
Site preparation	ls	job	$4,000	$5,250
Excavation	cy	2,900	9.00	6.50
Concrete, piers	cy	225	68.00	66.00
anchors	cy	495	50.00	48.00
Struct stl, galv, towers	ls	job	22,000	27,309
Stl pipe, 20" ϕ, 5 16" ga, with bolted flanged joints	ls	job	15,500	20,000
Cables, round, 2 main of 1-13 16" bri strand & 2 wind of 1-3 8" bri strand	s	job	21,000	30,501
Riprap	cy	2,100	5.00	4.00
Sales tax	ls	job	4,638	4,056

Commenced: 6-9-58. Liq. dam., $30 day.

Pit and Dam Reservoirs Prorate Prices

This "routine" award by the Bureau of Land Management, Portland, Ore., for 26 pit and dam type reservoirs for stock watering on the Madeline Plains and Honey Lake watersheds in Lassen County, Calif., is based on a bid of 26 cents per cu yd throughout, regardless of minor variations in yardage at the various sites. The $8,445 contract went to Miller's Custom Work & Repair, Susanville, Calif., on a low bid 7% under the second and almost 47% below the high.

How the work varies from site to site and what it covers are shown in the accompanying table of measurements.

Dam type	Max hgt fill	top width	L'gth	Slopes	Spill-way	Keyway
*Crabtree	10′	10′	298′	3:1&2:1	3x15′	10x4x290′
†Nye	10′	10′	240′	3:1&2:1	3x25′	10x3x240′b
‡Cotton-wood #1	8′	10′	190′	3:1&2:1	3x20′	10x1x200′
#2	8′	10′	190′	3:1&2:1	3x20′	10x1x200′
‡Marr	8′	10′	180′	3:1&2:1	3x10x30′	10x4x90′b

a Fill to be placed across draw. b Carryall construction
* Approx. 1,780 cu ft. † Approx. 1,821 cu ft.
‡ Approx. 900 cu ft

Pit type Reservoir	Measurements Bottom	Depth	Side slopes	Approx. cu ft
Skeleton	40 x20′	10′	4:1 & 2:1	1,285
Buckhorn Flat	20 x20′	8′	4:1 & 2:1	889
Buckhorn Creek	40 x20′	10′	4:1 & 2:1	1,285
E. Fork Red Rock #1	20 x20′	10′	4:1 & 4:1	1,100a
#2	30 x10′	7′	4:1 & 4:1	700a
Red Rock, Middle Br	40 x20′	10′	2:1 & 4:1	1,285
Sugarloaf	50 x20′	10′	4:1 & 4:1	2,600
N. E. McDonald	40 x20′	10′	4:1 & 2:1	1,285
S. W. McDonald	40 x20′	10′	4:1 & 2:1	1,285
McClean	40 x20′	10′	4:1 & 2:1	1,285
Wilson	40 x20′	10′	4:1 & 2:1	1,285
Withdrawal	40 x20′	10′	4:1 & 2:1	1,285a
N-J	90 x20′	7′	4:1 & 2:1	1,062
W. Painter	40 x20′	10′	4:1 & 2:1	1,285a
Pilgrim Lake	40 x20′	10′	4:1 & 2:1	1,285
Upper Forks	40 x20′	10′	4:1 & 2:1	1,285
Evans	40 x20′	10′	4:1 & 2:1	1,285
Button Mountain	60 x30′	7′	4:1 & 2:1	1,040
Hot Spring	20 x20′	8′	4:1 & 4:1	900
Olsen	40 x20′	10′	4:1 & 2:1	1,285
Fish & Game	40 x20′	10′	4:1 & 2:1	1,285

The contractor must furnish all the materials, and haul them to the 26 sites.

Wages include: shovel, crane & dragline operator, up to and including one yard $3.75, over one yard $3.85; tractor and dozer operators $3.55; general and dozer doperators $3.55; air compressor operator $3.10; truck drivers, 8 yards and over $3.35; dump truck operators $2.75 to $3.10; flat rack truck operators $2.81 to $3.01; general laborers $2.685.

The bidding on these reservoirs included:

1C	Miller's Custom Work & Repair, Susanville, Calif.	$8,445
2	Forrest Jones, Turmo, Calif.	9,095
6	Pyramid Constr. Co., Reno, Nev.	15,918

Bids: 8-28-59		Quan-	Unit Prices	
Items	Unit	tity	1C	2
Construct 26 dam & pit type reservoirs	cy	32,482	$0.26	$0.28

Completion schedule: 120 cal days
Liquidated damages: $10 day

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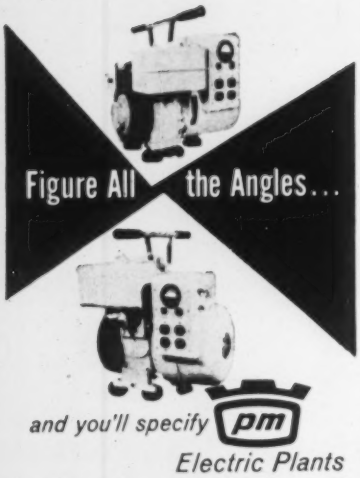
90 Broad St., New York 4, N. Y.
Write, wire or phone Whitehall 3-2558. Cable "Walgahagan".



and you'll specify pm Electric Plants

Read how exclusive PM features put job pay-out dollars *right back in your pocket!*

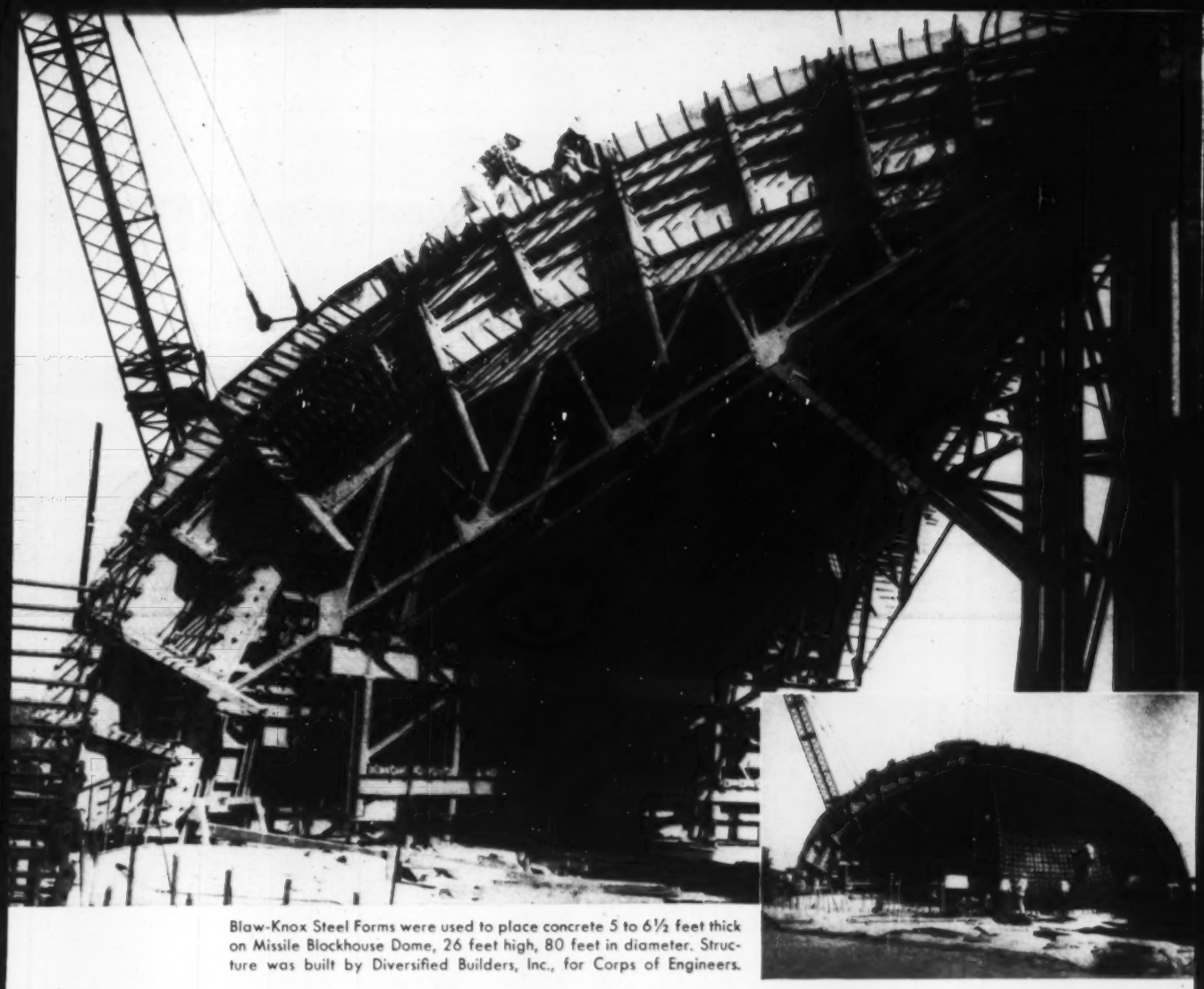
- RPM indicator puts $70 each 6 months in your pocket!
- Automatic spark advance puts $60 every 6 months in your pocket!
- Pushbutton start puts $30 per month in your pocket!
- Remote control puts $30 per month in your pocket!

Write for free demonstration. There's a PM Field Engineer near you.

Pacific Mercury
13232 Leadwell
North Hollywood 20, Calif.

ONE YEAR WARRANTY ON ALL PM PRODUCTS

Manufacturers of the Thomas Electronic Organ



Blaw-Knox Steel Forms were used to place concrete 5 to 6½ feet thick on Missile Blockhouse Dome, 26 feet high, 80 feet in diameter. Structure was built by Diversified Builders, Inc., for Corps of Engineers.

Blaw-Knox Steel Forms used in construction of Cape Canaveral Missile Blockhouse Domes

Traveler-mounted forms sectionalized for removal through 6 x 8-foot personnel exits

1,900 cubic-yards of 3,750 p.s.i. concrete, 5 to 6½ feet thick, was placed in specially designed Blaw-Knox Steel Forms in the construction of each Missile Blockhouse Dome at the Air Force Missile Test Center, Cape Canaveral, Florida.

Concrete was placed first in a 5-foot deep, 12-foot diameter, central compression ring. Inside surface forms mounted on rubber-tire travelers, and fabricated in two 60-degree, "orange peel" shapes, 12 feet wide at the inside base and 1 foot wide at the inside crown, were set. Screw jacks under the 28-foot long travelers raised and lowered the forms. After pouring and curing, the travelers' wheels were set at an angle to allow the forms to traverse circumferentially to the next pour, thus completing the inside pours in three 120-degree sections. All inside surface forms and related framework, travelers, and falsework were disassembled in less than three days and removed through the 6 x 8-foot personnel exit.

Outside surface forms and bulkhead panel sections were positioned by truck-mounted cranes. Concrete was placed at the rate of 60 cubic yards per hour with two Blaw-Knox, 1-cubic-yard concrete buckets. The entire concreting operation was completed in 48 days.

Concreting of Missile Blockhouse Domes, like dams, bridges, tunnels, can be mechanized to cut costs. Call Blaw-Knox Steel Forms Consultation Service early in your planning for an important engineering contribution to your project.

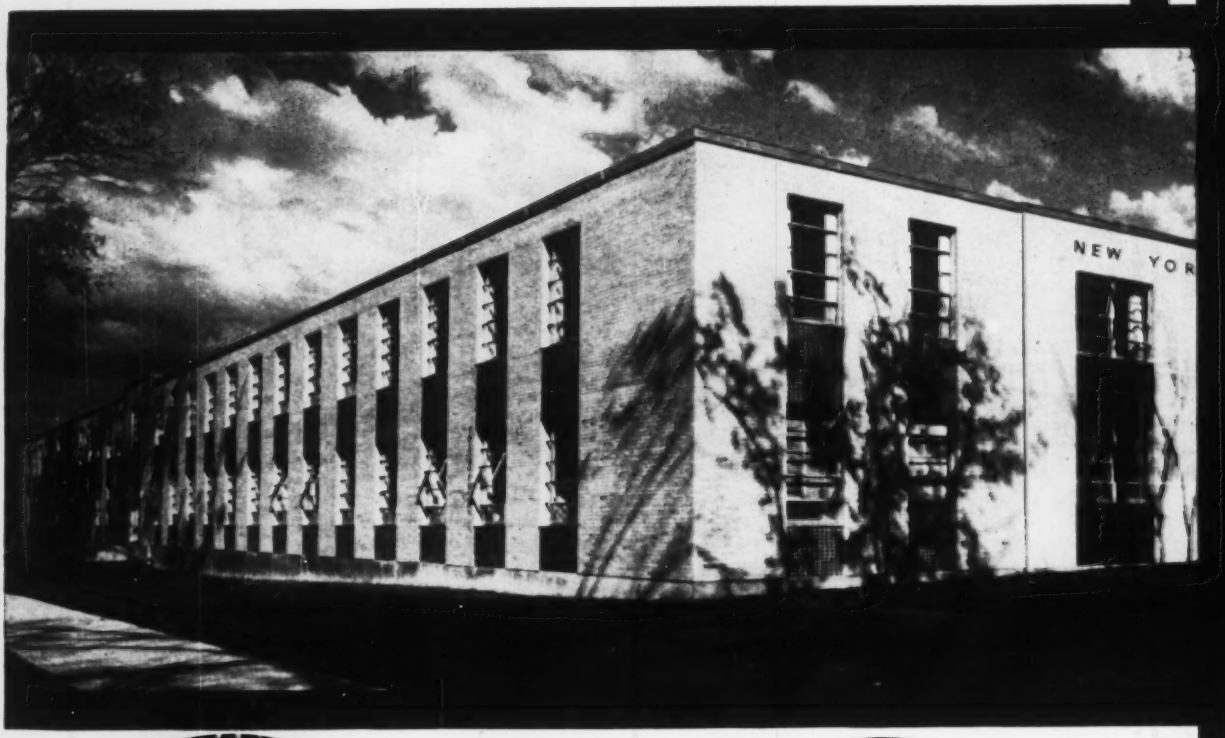
BLAW-KNOX

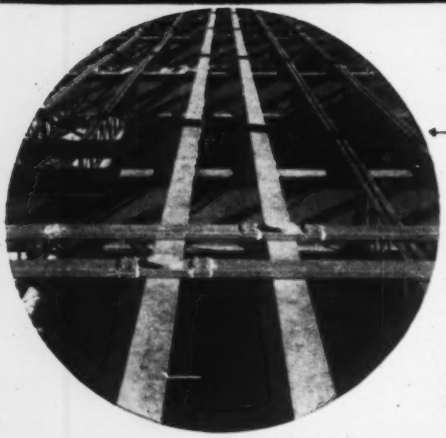
BLAW-KNOX COMPANY

Blaw-Knox Equipment Division • Pittsburgh 38, Pennsylvania

STerling 1-2700

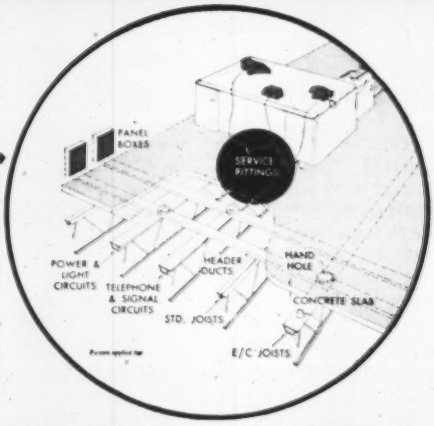
Underfloor Electrification isn't NEW...
But it's NEWS when a quality system offers big savings so any building "can afford" electrification





This construction view shows the clean arrangement of header ducts installed on Ceco E.C Joists. These header ducts were installed quickly and economically by an electrical crew which had never before installed a system of underfloor electrification.

Electrical, telephone and signal wires are run from the panel boxes down through the header ducts, into the top chord of the E.C Joist and up through the service fittings to desks located anywhere on the floor. Whenever desks are moved, the fittings can be installed anywhere along the joists to service the new positions.
The E.C Joist system is listed by Underwriters' Laboratories for use with standard header ducts and electrical accessories manufactured by General Electric Co., National Electric Division of H. K. Porter Co. (formerly Nepco) and Walker Bros. of Conshohocken.



TOTAL MANUFACTURING FOR THE BUILDING INDUSTRY FROM RAW TO FINISHED PRODUCTS

CECO'S E/C JOIST SYSTEM OF UNDERFLOOR ELECTRIFICATION ASSURES QUALITY WITH ECONOMY

New York Telephone Company Building, Utica, N. Y.

Architect: Frank C. Delle Case, Utica.

General Contractor: McKay Construction Co., Oneida.

Electrical Contractor: Keller Electric Company, 36 Genesee St., New Hartford, N. Y.

When a building method offers quality at a cost lower than any competing system, that's a combination hard to beat.

Add to that down-to-earth practicality, plus design that satisfies the future . . . then you can specify with confidence.

Such is Ceco's E/C Joist system of underfloor electrification. Savings are realized because Ceco's E/C Joists do two jobs: 1—provide raceways for underfloor electrification; 2—carry the floor load. Now any building "can afford" underfloor electrification.

These advantages of Ceco's E/C Joist system were proved in the Utica, New York Telephone Company office building.

The architect specified Ceco's E/C Joist system and a commonly used alternate. The successful bidder's figures showed the Ceco system saved 56c per square foot compared with the alternate. Read what those concerned have to say:

Owner, Milton A. Abelove and Daniel B. Myers:
"The E/C Joist system satisfied our requirements of avoiding electrical obsolescence for years to come, and we saved a considerable amount of money."

General Contractor, John T. McKay:
"The savings shown in the bids were proven on the job by the Ceco E/C Joist system. I would like to erect more buildings using the same system."

Electrical Contractor, Reginald Keller:
"Installation of the E/C Joist system was practical. Our workmen were able to install it economically, even though they had never installed underfloor electrification using header ducts."

On your next job specify the Ceco E/C Joist system. Send for the facts now. Mail the handy coupon today. Ceco Steel Products Corporation. Sales offices, warehouses and fabricating plants in principal cities. General offices: 5601 West 26th Street, Chicago 50, Illinois.

CECO STEEL

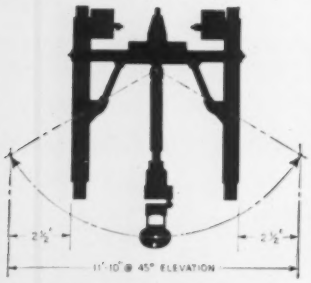
IN CONSTRUCTION PRODUCTS CECO ENGINEERING MAKES THE BIG DIFFERENCE . . . Steel Joists / Steelforms / Concrete Reinforcing / Curtainwalls, Windows, Screens, Doors / Cecoframe Buildings / Roofing Products / Metal Lath

CECO STEEL PRODUCTS CORPORATION
5601 West 26th Street, Chicago 50, Illinois ENR

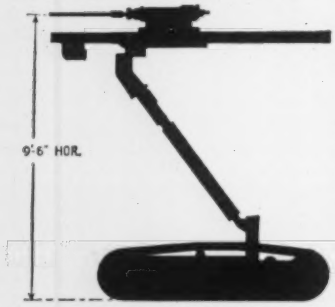
Please send the following technical literature:
☐ E. C Joist Manual ₹3011-A ☐ Steel Joist Catalog ₹3001-O ☐ Joist Load Tables ₹1009

name _____
position _____
firm _____
address _____
city _____ zone _____ state _____
☐ If student, check here for special data.

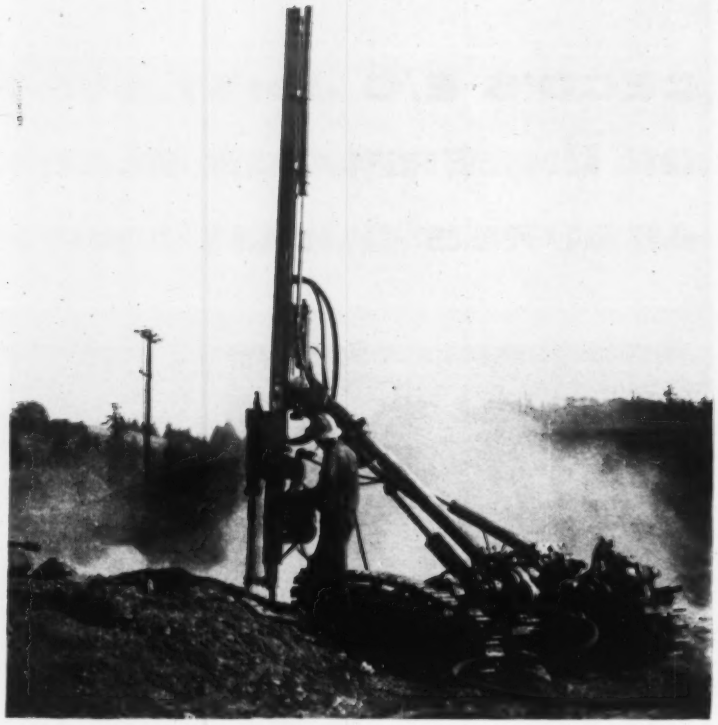
MORE SWING



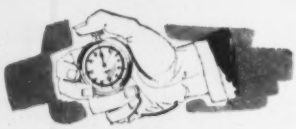
...MORE REACH



...MORE FOOTAGE



with Gardner-Denver Swing-Boom "Air-Trac"®



TIME TO TALK TIME-SAVING

Gardner-Denver believes there's no substitute for men—it has been our philosophy of growth for 100 years. Your Gardner-Denver construction equipment specialist has helped many uncover ways to speed the pace . . . lower drilling costs. He's a good man to know. Get in touch with him soon.

Swings 11'10" . . . 2½' over both tracks Now drill more hole from one position . . . drill over a ledge from either side. Feed swings 11'10" at 45° elevation . . . moves to 2½' outside of each track with balanced stability.

Reaches to 9'6" height—for horizontal drilling Get better spacing of horizontal holes . . . reach to 9'6" for high breast holes.

Moves quickly . . . safely "Air Trac" is self-equalizing, self-stabilizing, with hydraulic track oscillation. Moves easily, safely over roughest terrain. Designed with an unusually low center of gravity for maximum stability. Long tracks and powerful crawler motors provide plenty of traction. "Air Trac" will pull its own compressor. Tracks available with rubber or steel pads.

Saves time . . . steps All controls conveniently located. Drilling and positioning controls grouped at the front of rig to save steps, setup and drilling time.

Pulls tight steel Powerful Gardner-Denver 5-cylinder radial air motor enables your driller to put the right pressure on the bit in all drilling situations . . . provides necessary pulling power to bring tight steel out of the hole.

Maintains hole alignment Easily handles in-line drilling . . . drilling in fitchery or fractured formations. Creep-free hydraulic boom keeps drill in position . . . track locks keep rig firmly in place in difficult drilling spots.

Drills fast, clean hole Gardner-Denver's line of powerful rock drills is most complete—six hard-hitting models to choose from.

Write for bulletin.

GARDNER-DENVER Since 1859 — 100 1959

EQUIPMENT TODAY FOR THE CHALLENGE OF TOMORROW

GARDNER - DENVER

Gardner-Denver Company, Quincy, Illinois

In Canada: Gardner-Denver Company (Canada), Ltd., 14 Curity Avenue, Toronto 16, Ontario

Materials Prices

Monthly Market Quotations by ENR Field Reporters

LUMBER, TIMBER, PLYWOOD PER M FT.B.M., CARLOAD LOTS F.O.B.

SOUTHERN PINE AND DOUGLAS FIR

All Southern Pine is No. 2 common or better and for No. 1 N. C. Box. (Prices in Bold Face)

All Fir boards, dimensions, planks No. 2, Fir small timbers and timbers are No. 1. Lengths up to 20 ft. (Prices in Italics)

		1x6 s4s	1x8 s4s	2x4 s4s	2x6 s4s	2x8 s4s	2x10 s4s	3x12 Rgh	6x12 Rgh	12x12 Rgh	LONG LEAF Y. P. Merchantable grade up to 20 ft. 2x12 Rgh	LONG LEAF Y. P. Merchantable grade up to 20 ft. 12x12 Rgh	FIR PLYWOOD ¼" Interior plyscored, C-D gr.	FIR PLYWOOD ¼" Ply-form grade*
Atlanta	n†R	**$97 00**	**$102 00**R	**$90 00**	**$90 00**	**$100 00**	**$100 00**	**$137 00**			**$117 00**	**$156 00**	$134 00	$270 00
Baltimore	o	**100 00**	**100 00**	**105 00**	**105 00**	**110 00**	**110 00**	**125 00**			**175 00**	**190 00**	180 00	280 00
		102 00g	*130 00g*	*130 00g*	*135 00g*	*135 00g*	*135 00g*	*158 00g*	*$180 00*	*$170 00*				
Birmingham	n†r	**83 00**	**85 00**	**82 00**	**84 00**	**89 00**	**95 00**	**111 00**			**115 00**	**168 00**	122 30	214 50
		80 00	*80 00*	*88 00*	*87 00*	*87 00*	*88 00*	*88 00*	*85 00*	*88 00*				
Boston	ns	**105 00**f	**105 00**f	**112 00**f	**112 00**f	**112 00**f	**123 00**a						175 00c	300 00c
		112 00	*112 00*	*125 00*	*125 00*	*125 00*	*138 00*	*144 00*	*146 00*	*167 00*				
Chicago	**	**121 00**	**124 00**	**118 00**	**132 00**	**140 00**	**141 00**	**136 00**			**164 00**	**164 00**	153 60	256 00
		138 00	*138 00*	*142 00*	*141 00*	*141 00*	*145 00*	*158 00*	*155 00*	*155 00*				
Cincinnati	n*	**102 50**	**103 75**	**96 50**	**98 00**	**104 75**	**112 75**	**121 00**			**138 00**	**125 00**	94 00f	180 00f
		110 75	*118 75*	*110 00*	*117 00*	*110 00*	*138 75*	*128 85*	*128 85*	*128 85*				
Cleveland	o**	**102 00**	**105 00**	**102 00**	**102 00**	**104 00**	**109 00**						124 00a	220 00
				125 00	*122 00*	*127 00*	*132 00*	*150 00*	*150 00*	*150 00*				
Dallas	‡R	**76 00**k	**85 00**k	**80 00**k	**80 00**k	**78 00**k	**78 00**k	**125 00**			**133 00**	**160 00**	112 50a,c	200 00a,c
Denver	n*		Not in stock		*128 50*	*125 50*	*128 50*	*124 50*	*140 00*	*156 00*			145 00	281 50
Detroit	‡	**138 00**	**140 50**	**138 00**	**136 00**	**143 50**	**143 50**				**151 50**		180 00g,c	270 00g,cR
		128 95	*128 95*	*158 95*	*157 50*	*160 00*	*165 50*	*204 00*	*221 00*	*221 00*				
Kansas City	tn	**120 00**	**120 00**	**130 00**	**132 50**	**135 00**	**150 00**						150 00	215 00
		135 00	*135 00*	*135 00*	*137 50*	*140 00*	*145 00*	*175 00*	*225 00*	*225 00*				
Los Angeles	znu	*101 00*	*101 00*	*101 00*	*101 00*	*101 00*	*101 00*	*136 00*	*141 00*	*141 00*			120 00	240 00
Minneapolis	or	*115 00*m	*115 00*m	*125 00*	*115 00*	*115 00*	*145 00*	*185 00*	*185 00*	*185 00*			200 00	320 00
Montreal	*bp	**84 00**a	**90 00**a	**84 00**a	**84 00**a	**99 00**a	**125 00**a				**120 00**	**120 00**	119 25	225 95
		160 00	*160 00*	*160 00*	*160 00*	*160 00*	*160 00*	*170 00*	*170 00*	*170 00*				
New Orleans	tn	**89 00**	**89 00**	**96 00**	**95 00**	**95 00**	**98 00**	**126 00**			**160 00**	**155 00**	122 41	207 00
		128 00	*128 00*	*137 00*	*138 00*	*138 00*	*138 00*	*140 00*	*140 50*	*160 50*				
New York	t	**115 00**	**116 00**	**125 00**	**125 00**	**125 00**	**135 00**	**245 00**			**245 00**	**255 00**	123 20a	207 60a
				131 00	*132 00*	*132 00*	*135 00*	*174 00*	*174 00*	*174 00*				
Philadelphia	nt	**105 00**	**105 00**	**110 00**	**110 00**	**110 00**	**120 00**	**135 00**					150 00A,R	270 00A
				135 00	*135 00*	*135 00*	*135 00*	*145 00*	*145 00*					
Pittsburgh	st	**110 00**	**115 00**	**130 00**	**120 00**	**145 00**	**145 00**	**165 00**			**180 00**	**185 00**	225 00	295 00
		135 00	*115 00*	*120 00*m	*150 00*	*155 00*	*160 00*	*220 00*	*200 00*	*200 00*				
St. Louis	lnt	**116 00**	**118 00**	**126 00**d	**126 00**d	**126 00**e	**128 00**e						170 25a,c,h	268 07a,cA
				145 00	*145 00*e	*145 00*e	*147 00*e	*199 00*e	*199 00*e	*199 00*				
San Francisco	nz	*88 00*	*88 00*	*92 00*	*92 00*	*92 00*	*92 00*	*106 00*	*127 00*	*127 00*			95 00h	180 00h
Seattle	n†	*68 00*	*78 00*	*82 00*	*83 00*	*82 00*	*81 00*	*100 00*	*105 00*	*105 00*			110 00a,eg	210 00a,eg
Toronto	*	**93 00**a	**98 00**a	**88 00**a	**86 00**a	**88 00**	**87 00**a	**98 00**a			**89 00**a		256 00	365 50
		112 00	*112 00*	*117 00*	*120 00*	*125 00*	*138 00*	*158 00*	*155 00*	*155 00*				

† F.o.b. mill. * F.o.b. city, CL, out of yard. ** F.o.b. city, CL, direct mill shipment. ‡ Deliv. to contr. CL.

LUMBER: Bold Face Type, Southern Pine. Italics, Douglas Fir. •a Spruce. •b Federal tax exempt, add 6% mun. & prov. tax. •c 5M lots. •d 8, 10, & 12 ft. lengths. •e 8 to 16 ft. lengths. •f Hemlock •g No. 1 common. •j 8 ft. lengths. •k No. 3 common. •l Add 2% sales tax. •m Up to 16'; No. 3 western pine. •n Less 2% disc. 10 days. •o Less 2% disc. 10th. •p Less 1% disc. 10 days. •q fir: $80.25 in truck lots, fob job or CL, f.o.b. city. •r for f.o.b. city price add $8 for pine, $35 for fir. •s asd trucklots •t trucklots del. •u Retail LCL yard. •v Retail LCL, del. •w add 6% mun. & Prov. tax. •x add 4% sales tax.

PLYWOOD (Plyform, oiled and edge sealed): Douglas fir, 4' x 8' panels. 5-ply sanded 2 sides, carload lots, delivered per 1000 sq. ft. surface. Seattle base price, Interior, moisture resistant, ¾", $156.00; ½", $176.00 Exterior, waterproof, ¾", $160.00; ½", $180.00. •a Delivered. •c Truck lots. •d A-C exterior. •e LCL. •f less 1%, 5 days. •g less 2% for cash. •h less 2% disc, 10 days. •j add 2% sales tax.

GLASS, EXPLOSIVES, CHEMICALS

	WINDOW GLASS Discounts from jobbers list, Feb. 1, 1950a: Single or Double Strength A quality	WINDOW GLASS Discounts from jobbers list, Feb. 1, 1950a: Single or Double Strength B quality	EXPLOSIVES Per lb. 40% Ammonia Gelatin in 50 lb. cases delivered in 500 lb. lots
Atlanta	78%f	80%g	$0.2495
Baltimore	74%d	74%d	.2695
Birmingham	82%f	82%f	.2495
Boston	72+10%p	72+10%p	.2695
Chicago	72%	72%	.2695
Cincinnati	74%	74%	.2695
Cleveland	74-2-10%	74-2-10%	.2495
Dallas	76%	76%	.2770
Denver	73.5%	73.5%	.2695
Detroit	74-10-10%	74-10-10%	.2695
Kansas City	76-10-10%	76-10-10%	.2695
Los Angeles	$12.88-17.32b	$10.45-14.13b	.2695
Minneapolis	71-10%	71-10%	.2695
Montreal	40-10-5%h	40-10-5%h	.23.20f
New Orleans	76%g	76%g	.2695
New York	79%i	79%i	.5030g
Philadelphia	78%	80%	.2695
Pittsburgh	72%	72%	.2495
St. Louis	72-10-10%,mo.	72-10-10%,mo.	.2695
San Francisco	60%	73%	.2695
Seattle	$8.55-11.55b,g	$6.41-8.67b,p	.2695
Toronto	$6.48-9.57b	$5.00-8.70b	.2695

Price of 80% Ammonia Gelatin is $0.15 per lb. higher than 40%, in U. S., $1.75 per 100 lbs. higher in Canada.

Glass: •a Jobbers' list price per box, 14 x 20, ss, $42.75 for A quality, $37.50 for B quality; 14 x 20, ds, $60.00 for A quality, $52.75 for B quality. •b sales tax extra. •c 77% for single strength. •d From 6-15-52 list. •e 77% for double strength. •f Single strength; double strength, 83%. •g From 8-1-58 list. •h ss ds, 40-in. •i 20 boxes min. •j CL quantity. •k eff. 12-58. •l eff. 10-15-58. •m less 2%/disc, 10 days. •n less 1% disc, 10 days. •o add 2% sales tax. •p less 1% for cash. •q deliveries in certain areas must be by truck or by truck and boat, requiring extra charge. •h F.o.b. Beloeil (near Montreal), per 100 lb., lots under 2000-, wood cases, forcite, 40%. Forcite 60%, $23.80 in fiber cases: forcite 40%, $23.20; forcite 60%, $24.95.

40% Ammonia Gelatin price ranges in other than urban areas, per lb: (except Seismograph Grades)

	C.L. 300,000 lb. lots	10,000 lb. lots	2,000 lb. lots	200 lb. lots
Group 1*	$0.2095	$0.2195	$0.2545	$0.2695
Group 2†	.2170	.2270	.2620	.2770

* All areas except those in Group 2 and N.J. cities of Bayone, Hoboken, Jersey City, No. Bergen, Union City and Weehawken. † Florida counties of Manatee, Hardee, Highlands, Okeechobee, St. Lucie and south thereof; Idaho; Maine; Montana; New Mexico counties of Catron, Socorro, Lincoln, De Baca, Roosevelt and south thereof; Texas counties of Bailey, Lamb, Hale, Floyd, Motley, Cottle, Hardeman, Foard, Knox, Haskell, Jones, Taylor, Coleman, McCulloch, San Saba, Burnet, Williamson, Milan, Robertson, Leon, Houston, Angelina, Nacogdoches, Shelby and south thereof.

PILES, TIES

PILES

Prices per linear foot, fir and pine, rough peeled, f.o.b. cars, New York. Fir based on Wash. and Ore. points to New York shipping area; pine under fifty feet based on freight from mid-South, over fifty feet, on freight from deep South.

Dimensions	Points	Length	By Rail Pine*§ R	By Rail Fir R
12" at butt	6-in.	30 to 39-ft.	$0.32a	
12" 2-ft. from butt	6-in.	40 to 44-ft.	.69	
12" 2-ft. from butt	6-in.	45 to 49-ft.	.74	
12" 2-ft. from butt	6-in.	50 to 54-ft.	.77	
12" 2-ft. from butt	6-in.	55 to 59-ft.	.81	*
14" 2-ft. from butt	6-in.	60 to 64-ft.	.87	
14" 2-ft. from butt	6-in.	65 to 69-ft.	.92	
14" 2-ft. from butt	6-in.	70 to 74-ft.	1.02	1.07
14" 2-ft. from butt	6-in.	75 to 79-ft.	1.07	1.07
14" 2-ft. from butt	5-in.	80 to 84-ft.	1.17	1.10
14" 2-ft. from butt	5-in.	85 to 89-ft.	1.27	1.15-1.20

* Pine piling over 90 feet available only in limited quantities. § ASTM Class B
• a, trucked in from N. J.

RAILWAY TIES

Prices f.o.b. per tie box carload lots:

		6" x 8" x 8' Untr.	6" x 8" x 8' Tr.	7" x 8" x 8'6" Untr.	7" x 8" x 8'6" Tr.
Birmingham*	Hardwood, Grade 3	$1.70	$2.55	Gr. 5 $2.25	$3.33
	Grade 2	1.50	2.35	" 4 2.10	3.18
	Grade 1	1.15	2.00	" 3a 1.70	2.78
Chicago	Red Oak		4.00a		4.50a
New York	S. L. Sap Pine	2.50	4.00	3.00	5.00
	Mixed Oak	2.50	4.00	3.00	5.00
Philadelphia	Mixed Oak	2.38	3.97	2.78	4.57
St. Louis	Mixed Oak	2.70	3.15a	3.15b	3.80a,b
San Francisco	Douglas Fir	2.05c,f	3.75c,f	3.52c,f	4.90c,e

Tr. Treated: Untr. Untreated. •Creosoted. • Empty cell. • Green f.o.b. cars. • 7" x 9" x 8'6". * Add 75¢ tie freight charge to Birmingham. •k 7" x 9" x 9'.

CHEMICALS

Water, sewage treatment, road work, f.o.b. carlots, New York

Bleaching powder in drums f.o.b. works, per 100 lb.	$5.05
Chlorine cylinders, liquid, per lb. f.o.b. works	.1
Calcium chloride, 77-80%, flaked, 100-lb. paper bag, f.o.b. works, ton	31.00
Silicate of soda, 52 deg., in drums, f.o.b. works, per 100 lb.	2.65
Soda ash, 58%, in paper bags, per 100 lb. dense	1.90
Sulphate of aluminum, commercial, in 100-lb. bags f.o.b. works	2.05
Sulphate of copper, 99% per 100 lb. f.o.b. works	21.20

See following ENR issues for OTHER PRICES:

- Clay Products, Lime, Plaster, Paint, Roofing: Last, Oct. 1; Next, Oct. 29.
- Wage Rates, Building Board, Lath, Insulation: Last, Oct. 1; Next, Oct. 29.
- Cement Aggregates, Ready-mixed Concrete, Asphalt: Last, Oct. 8; Next, Nov. 5.
- Iron & Steel Products, Pipe: Last, Oct. 15; Next, Nov. 12.

Construction Reports

Bids Asked—Low Bidders—Contracts Awarded—

Compiled by Business News Department—Engineering News-Record, 330 W. 42nd St., New York 36, N. Y., ELSIE EAVES, Manager J. A. MAHONEY, M. WETZEL, M. E. SCIORRA, D. TARTAGLIA, MARIE MORAVSIK, ELAINE CHOMYAK, ELIZABETH WERRA, ELEANOR QUERET, Reports, J. H. WEBBER, E. R. HUBER, Statistics.

NEW ENGLAND

HEAVY CONSTRUCTION—LB & CA

▲ **MASSACHUSETTS**—Commonwealth of Mass., Dpt. P. Wks., 100 Nashua St., Boston.

J. F. White Contg. Co., P.O. Box 358, Westwood, Mass., CA **$1,877,000**, superstructure for bridge over Merrimack River, Rte. 495, Lawrence. Bids Sept. 9, awarded Oct. 6. CD 9/11, under LB.

BUILDINGS—LB & CA

▲ **V. A. Cusandello Contracting Engineering, Inc.**, 27 Edward St., Worcester, Mass., CA **$1,084,197**, est. $1,000,000, JUNIOR-SENIOR HIGH SCHOOL, Grove and Murdock Sts., WINCHENDON, MASS. Town, Supt. Schools, Winchendon, Mass. Bids Sept. 24. CD 10/5, under LB.

▲ **Horn Constr. Inc.**; 254 Prospect Ave., West Hartford, Conn., CA **$1,350,000**, DISTRIBUTION CENTER, CA **$120,000**, 12,000 sq. ft. WAREHOUSE; CA **$110,000**, SERVICE CENTER, Brainard Field, HARTFORD, CONN. Hayes & Horn, 170 Sigourney St., Hartford, Conn. Grand total $1,580,000, Russell & Gibson & Assocs., 1005 Farmington Ave., West Hartford, Conn., archts. Awarded Oct. 7. CD 9/28.

▲ **Bank Buildings & Equipment Corp. of America**, 1130 Hampton St., St. Louis, Mo., CA **$1,500,000**, design and construct, 70,000 sq. ft. BANK, W. Main St., WATERBURY, CONN. Colonial Bank & Trust Co., 81 W. Main St., Waterbury, Conn. Awarded Oct. 9.

MIDDLE ATLANTIC

HEAVY CONSTRUCTION—LB & CA

▲ **Avella Constr. Co.**, 215 E. 149th St., New York 51, N. Y., CA **$2,040,000**, general contract, CLASS ROOM and LIBRARY BLDG. (Bldg. 8) alterations to Bldgs. 5 & 7, New York State School of Industrial and Labor Relations, Cornell University, ITHACA, N. Y. Dpt. P. Wks., State Office Bldg., Albany, N. Y. Bids Sept. 2. CD 9/10, under LB.

▲ **Fischer-Malik, Inc.**, 11 Moffitt Blvd., Bay Shore, N. Y., CA **$1,700,000**, JUNIOR-SENIOR HIGH SCHOOL, Garden City Ave., WYANDANCH, N. Y. Union Free School Dist. No. 9, Wyandanch, N. Y. Bids Sept. 21. CD 9/3.

▲ **Albert S. Feibel**, 94 Greenwood Dr., Millburn, N. J., Owner Builds, $1,250,000, 50 HOUSES, Prospect St., BERNARDSVILLE, N. J. Daniel Washington, Long Hill Rd., Gillette, N. J., archt.

▲ **Sordoni Constr. Co.**, E. End Blvd., Wilkes-Barre, Pa., CA **$3,000,000**, 1 story, 120,000 sq. ft., TRANSISTOR AND RECTIFIER MANUFACTURING PLANT, U. S. Rte. 309, Crestwood Industrial Park, Mountaintop, WILKES-BARRE, PA. Radio Corp. of America, 30 Rockefeller Plaza, New York 20, N. Y. CD 9/17.

SOUTH

BUILDINGS—BA

▲ **Ky., Lexington**—DENTAL SCHOOL—BA 11/17—Commonwealth of Ky., Div. Purchases, Frankfort, 7 story, 65,000 sq. ft., brick, concrete block, rein.-con. dental school, University of Kentucky, $2,500,000. Plans deposit $100. Meriwether Marye & Assoc., 248 Short St., Lexington, archts. Proctor Ingles, 915 S. Limestone St., Lexington, engrs. CD 9/24.

HEAVY CONSTRUCTION—LB & CA

▲ **WEST VIRGINIA**—State Rd. Comm., Charleston, Zone 5.

C. F. Replogle Co., P.O. Box 308, Circleville, O., CA **$1,225,116**, grading, draining 2.378 mi. Interstate 64, Contr. No. 2, Proj. I-64-1(8) 2e, Cabell Co. Bids Oct. 6, awarded Oct. 8. CD 9/22.

▲ **FLORIDA**—State Rd. Dpt., Holland Bldg., Tallahassee.

Duval Eng. & Contr. Co., Box 1588, Jacksonville, Fla., CA **$1,411,734**, 4-lane divided 9 in. plain C. conc. pavement, limerock base, b. conc. course with binder course Type 1A, surf. tr., 5 dual grade separation bridges, 1.78 mi. SR 8, FAI Proj. No. I-10-5(4) 356, Job No. 72270 3478, Duval Co. Bids Aug. 25, awarded Oct. 7. CD 9/1, under LB.

BUILDINGS—LB & CA

▲ **William A. Berbusse, Jr., Inc.**, 322 Royal Palm Way, Palm Beach, Fla., CA **$1,680,000**, PHARMACY WING and ANIMAL FACILITIES, University of Florida, State Proj. 0836, GAINESVILLE, FLA. Florida State Bd. Control, Admin. Bldg., University of Florida, Gainesville, Fla. Bids Sept. 2, awarded Oct. 6. CD 9/9, under LB.

▲ **H. L. Coble**, 1705 Battleground Ave., Greensboro, N. C., CA **$5,320,000**, 598 low rent HOUSING UNITS, Ala. 125-1 and 125-2, BESSEMER, ALA. Bessemer Housing Auth., 207 N. 17 St., Bessemer, Ala. Bids Aug. 19. CD 8/24, under LB.

▲ **Cedars of Lebanon Hospital**, c/o Smith & Korach, archts., 1640 Lenox Ave., Miami Beach, Fla., contract cancelled, Cedars of Lebanon HOSPITAL, NW 14 and 15 St., west of NW 12 Ave., MIAMI, FLA. CA **$1,920,000**. Will re-advertise. CD 6/25, under CA.

▲† **V. L. Nicholson Co.**, Box 2836, Knoxville 12, Tenn., LB **$1,419,483**, (7 bidders), CENTRAL DATA PROCESSING FACILITY, O.R.G.D.P., Inv. 401-60-4A, OAK RIDGE, TENN. Atomic Energy Comn., R. J. Dunbar, Area Constr. Div., P.O. Box 1, Oak Ridge, Tenn. Bids Oct. 1. CD 9/23.

MIDDLE WEST

BUILDINGS—BA

▲ **Ind., New Albany**—CITY and COUNTY OFFICE—BA 10/29—City of New Albany and Floyd Co., 4 story, rein.-con. city, county office. $1,800,000. Plans deposit $100. Walker, Applegate, Oakes & Ritz, Elsby Bldg., archts. Southern Eng. Co., 322 W. Jefferson St., Louisville 2, Ky., engr.

▲ **O., Berea**—SCHOOL—BA 12/5—Bd. Educ., 390 Fair St., Ford Junior High School. $1,500,000. Plans deposit $55. Mellenbrook, Foley & Scott, 20 Beech St., archts. CD 4/9.

▲ **Wis., Milwaukee**—ADMINISTRATION—BA 11/19—School Bd., 1111 N. 10 St., Zone 3, 2 and 3 story administration. $2,500,000. Plans deposit $125. Grassold-Johnson & Assocs., 734 N. Jefferson St., Zone 2, archts. CD 1/23/58.

HEAVY CONSTRUCTION—LB & CA

▲ **C & C Constr. Co.**, 4625 Industrial Rd., Fort Wayne, Ind., CA **$2,373,243**, est. $3,500,000, sewerage treatment plant addn., FORT WAYNE, IND. City, City Hall, Fort Wayne, Ind. Bids Sept. 15, awarded Sept. 22. CD 9/21, under LB.

▲ **Robert Gordon, Inc.**, 21 N. Jefferson St., Chicago 6, Ill., CA **$1,670,737**, wash water piping Central Filtration Plant, Spec. 80.391-59-2, CHICAGO, ILL. City, City Hall, Chicago, Ill. Bids Aug. 19. CD 8/26, under LB.

BUILDINGS—LB & CA

▲ **Northern Builders, Inc.**, 4008 W. Addison St., Chicago, Ill., CA Est. **$2,000,000**, 212,000 sq. ft. WAREHOUSE, SALES AND TRAINING BLDG., Lunt Ave. and Nicholas Blvd., Centex Industrial Park ELM GROVE, ILL. AMF Pinsetters Inc., sub. American Machine & Foundry Co., 261 Madison Ave., New York 16, N. Y.

PROJECTS COVERED

By Size

Construction projects here reported cover the United States and Canada, are of these minimum sizes or larger: water supply, earthwork, waterways $53,000, other public works $88,000, industrial buildings $110,000; other buildings $400,000. Also Foreign projects of $1,000,000 and more in size of Interest to American contractors.

By Regions & Classes of Construction

(In order of Listing)

BIDS ASKED
LOW BIDDERS
CONTRACTS AWARDED

New England	**Middle West**
Middle Atlantic	**Mississippi to Rockies**
South	**Far West**

PROPOSED WORK

Water Supply	**Public Buildings**
Sewers, Waste Disposal	**Mass Housing**
Bridges	**Commercial Buildings**
Streets & Roads	**Industrial Buildings**
Earthwork, Waterways	**Unclassified**

In These Stages

PROPOSED WORK: Before and including appointment of engineers or architects.

BIDS ASKED: BA (new announcements only). For full calendar, see also preceding issues.

SOON LETS CONTRACT: SLC

LOW BIDDERS: LB On jobs below $500,000 in value all low bidder news will be the final reports published on the projects involved except where award is not made to the low bidder. In this case, a supplementary contract award report will be published.

CONTRACTS AWARDED: CA Except awards to low bidders previously reported in low bidder stage.

CD dates shown are of Construction Daily Issue in which last previous report was published.

OWNERS, ENGINEERS, ARCHITECTS, CONTRACTORS are invited to report their new jobs for listing in these reports when they meet or exceed the size minimums shown above. Address these news releases to J. A. Mahoney, REPORTS, ENGINEERING NEWS-RECORD, 330 W. 42 St., New York 36, N. Y.

Symbols and Abbreviations Include:

†	Federal Government
▲	Project of $1,000,000 or over
ENR	Engineering News-Record
CD	Construction Daily

For additional reports see Construction Daily.

MISSISSIPPI TO ROCKIES

HEAVY CONSTRUCTION—LB & CA

▲ **MINNESOTA**—State Hy. Dpt., Capitol Approach, St. Paul.

Minn.—Park Constr. Co., 51 37th Ave. N.E., Minneapolis, Minn. and **Arrowhead Engr. & Constr. Co.**, 1122 W. Railroad St., Duluth, Minn., CA **$2,033,787**, sand-gravel, sub-base, gravel base, road mixed bit. base, plant mixed bit. surf., T No. 10 between Snelling Ave. N. and Jct. TH No. 96, Ramsey Co.;

Minn.—Hallett Constr. Co., Crosby, Minn. CA **$1,302,257**, sand-gravel sub-base crushed rock base, etc. 4.2 mi. near Austin, Mower Co.;

Minn.—Berghuis Constr. Co., Prinsburg, Minn., CA **$1,261,882**, sand-gravel sub-base, gravel base, road mixed bit. base and surf. and bridges between Jct. CSAH 15 near Fergus Falls and Jct. THs 52 and 59, Otter Tail Co.;

Minn.—Alley Constr. Co., Faribaut, Minn., CA **$809,123**, grading, pumping station, 1.2 mi. North Mankato, Nicollet Co.;

Minn.—Minnesota Valley Imprvt. Co., Granite Falls, Minn. & **Berghuis Constr. Co.**, Prinsburg, Minn., CA **$763,576**, sand-gravel sub-base, gravel base, road mixed bit. base and plant mixed bit. surf. 8.4 mi. Pine Co. Brand total $6,170,625. Bids Sept. 25. CD 9/29, under LB.

▲† **Al Johnson Constr. Co.**, Foshay Tower, Minneapolis, Minn., and **Peter Kiewit Sons Co.**, 1024 Omaha National Bank, Omaha, Neb., LB **$9,587,002** (7 bidders), Upper Lock St. Anthony Falls Project, Mississippi River, Minneapolis, Inv. No. CIVENG-21-018-60-2, MINNESOTA. U. S. Eng., 1217 U. S. Post Office & Custom House, St. Paul 1, Minn. Bids Oct. 7. CD 9/30.

▲ **ARKANSAS**—State Highway Dpt., State Capitol Little Rock.

W. R. Fairchild, Ltd., Farmerville, La., CA **$2,740,545**, south terminal interchange, 1 mi., as part of new Greater Little Rock Expressway, Pulaski Co. Bids Sept. 30, awarded Oct. 2. CD 10/7, under LB.

▲ **H. B. Zachry, Constr. Div.**, Box 10188, San Antonio 21, Tex. CA Est. **$1,260,000**, 42 mi. 20 in. and 24 in. gas gathering lines, Southfield area, near Kingsville, in Kleberg and Nueces Counties, TEXAS. Humble Oil & Refining Co., 1216 Main St., Houston, Tex. CD 6/11/58.

▲ **R. B. Potashnick**, P.O. Box 423, Cape Girardeau, Mo., LB **$5,610,520** est. $8,299,285 Alternate 1: LB $10,814,430, est. $15,770,445, Alternate 2: LB $11,731,680, est. $17,273,855, Alternate 3 (13 bidders), Dillon Dam, DENVER, COLO. Denver Bd. Water Comrs., 114 West Colfax, Denver, Colo. Bids Oct. 8. CD 8/27.

BUILDINGS—LB & CA

▲ **Revco Constr. Co.**, 214 N. Broadway, Shawnee, Okla. LB **$1,168,300**, est. $1,000,000, Nimitz JUNIOR HIGH SCHOOL, TULSA, OKLA. Bd. Educ., 410 E. Cincinnati, Tulsa, Okla. Bids Oct. 7. CD 9/25.

▲ **Palmetto Village Blvd. Co., Inc.**, 2001 Jenny Lane, Houston, Tex., CA **$1,350,000**, Base Bid, 200 unit MOTOR HOTEL, 18 acre site across St. from "29 Palms Motor Hotel" HOUSTON, TEX. Palmetco Corp., 8610 Main St., Houston, Tex. CD 3/23.

▲ **Joe W. Joeris**, Box 2615, 219 Ave. A, San Antonio, Tex., CA **$1,110,000**, Base Contract, CHEMISTRY-GEOLOGY, SAN ANTONIO, TEX. San Antonio College, 1300 San Pedro Ave., San Antonio, Tex. Bids Sept. 30. CD 10/6, under LB.

FAR WEST

BUILDINGS—LB & CA

▲ **City**, County-City Bldg., Seattle, Wash., all bids received July 30 returned to bidders, new bids to be called on build-lease basis, design, finance and constr. 200,000 sq. ft. steel frame or rein.-con. OFFICE, 4 Ave. and Cherry St., SEATTLE, WASH., Over **$4,000,000**. CD 4/10.

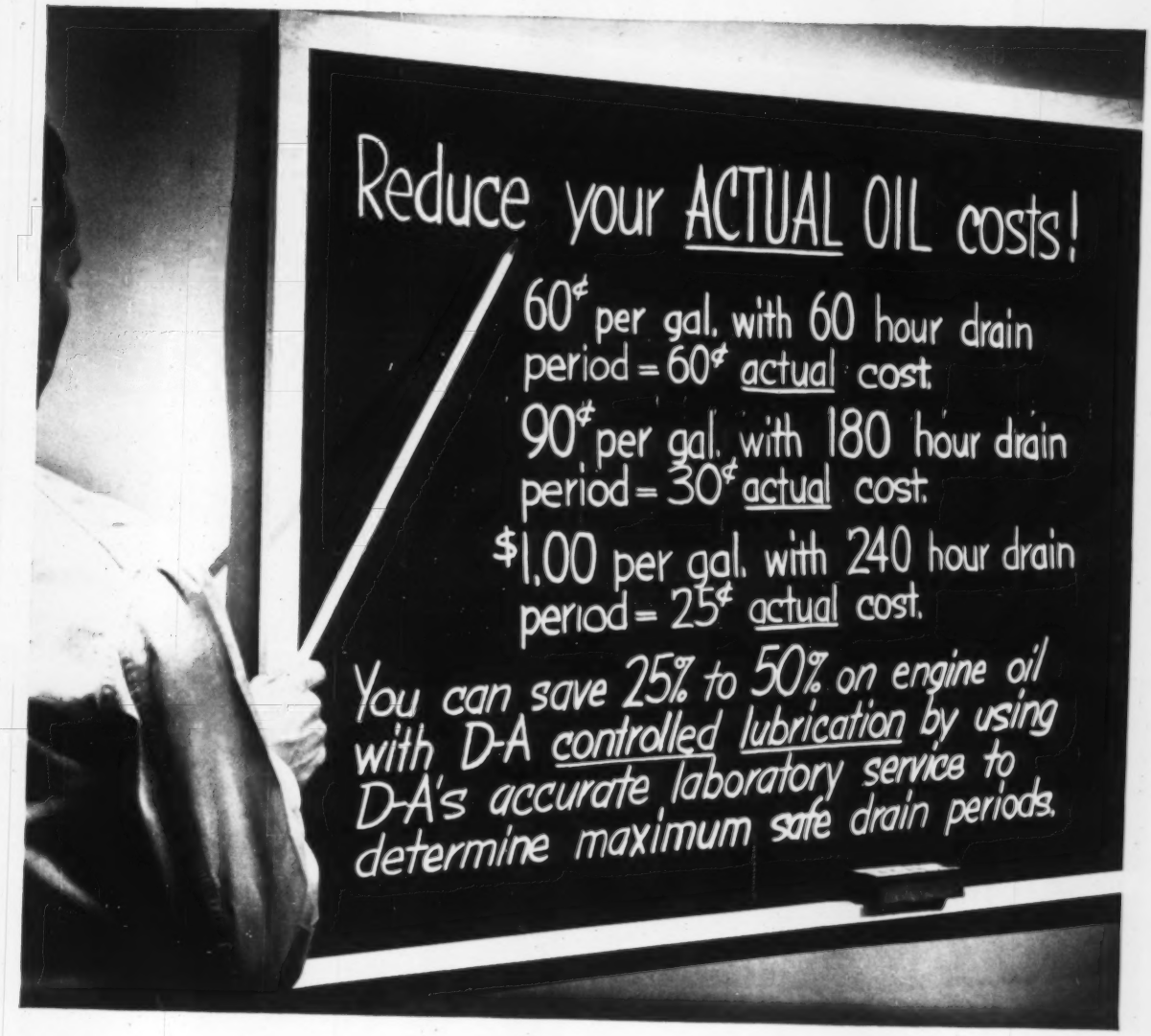
▲ **Trio Bldrs., Inc.**, P. O. Box 493, Renton, Wash., Day Labor, **$1,237,500**, 19 HOUSES, 17100 block on 127 St. S. E., SEATTLE, WASH.

▲ **Tom E. Norcross**, 6053 Atlantic Ave., Long Beach, Calif., CA **$1,751,600**, rein.-con., gunite, masonry Clark Junior High School Conversion to Crescenta Valley HIGH SCHOOL, 4400 Ramsdell Ave., La Crescenta, GLENDALE, CALIF. Glendale Unified School Dist., 421 E. Wilson Ave., Glendale, Calif. Bids July 30. CD 8/5, under LB.

▲ **Lindgren & Swinerton, Inc.**, 1631 Beverly Blvd., Los Angeles, Calif., CA **$3,750,000**, 8 story TELEPHONE EXCHANGE BLDG., 420 S. Grand Ave., LOS ANGELES, CALIF., Pacific Telephone & Telegraph Co., 740 S. Olive St., Los Angeles 14, Calif. Woodford & Bernard, 410 N. La Brea, Los Angeles, Calif., archts. Robt. M. Wilder, 816 W. 5th St., Los Angeles, Calif., engr.

▲ **Evert & Payton**, 810 Railroad Ave., Santa Paula, Calif., CA **$1,375,439**, JUNIOR HIGH SCHOOL, NEWHALL, CALIF. William S. Hart Union High School

(Continued on page 69)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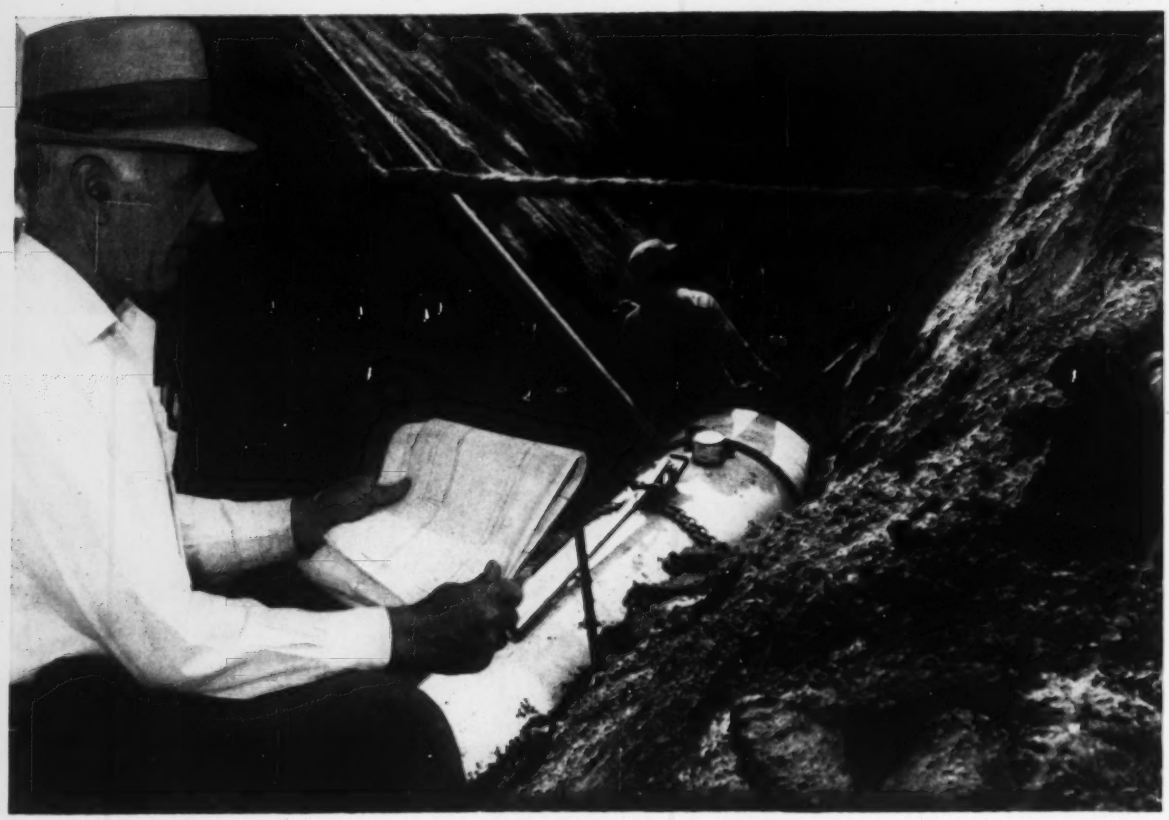

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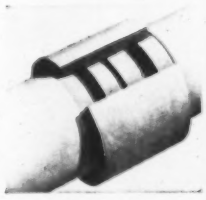

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WILLIAMS
EQUIPMENT and SUPPLY CO.
456 W. Eight Mile Rd., Hazel Park, Mich.

(Continued from page 66)

Dist., 24825 N. Newhall Ave., Newhall, Calif. Bid Sept. 1, awarded Oct. 5. CD 9/8, under LB.

▲ **Sheldon L. Pollack Constr. Co.**, 5880 Pico Blvd., Los Angeles, Calif., CA $1,627,400, 3 story, 54,000 sq. ft., 100 bed HOSPITAL, OCEANSIDE, CALIF. Tri-City Hospital Dist., 580 Elm Ave., Carlsbad, Calif. Bids Sept. 17. CD 9/23.

▲ **Theo. G. Meyer & Sons**, 200 Quint St., San Francisco, Calif., LB $2,354,466, (8 bidders), 12 story, 211 dwelling units, Yerba Buena Plaza Annex HOUSING, Golden Gate, Turk, Buchanan and Webster Sts., incl. SENIOR CENTER RECREATION BLDG., SAN FRANCISCO, CALIF. San Francisco Housing Auth., 440 Turk St., San Francisco, Calif. Spencer & Lee, 251 Kearny St., San Francisco, Calif., archts. Bids Oct. 6. CD 2/10/56.

▲ **Aicha Constr. Co.**, 1426 Makaloa St., Honolulu, Hawaii, CA $1,200,000, 11 story, 70,000 sq. ft. PROFESSIONAL BLDG. for medical, denial and commercial HONOLULU, HAWAII. U. Char Ltd., 169 Kukui, Honolulu, Hawaii. Kenneth Sato, 244 Kalihi, Honolulu, Hawaii, designer.

CANADA

HEAVY CONSTRUCTION—LB & CA

▲ **Saskatchewan**—BA 10/30—Saskatchewan Power Corp., 1739 Cornwall St., Regina, electrical generators for Hydro-Electric Proj., Saskatchewan River, Squaw Rapids. Crippen Wright Engineering Ltd., 207 West Hastings St., Vancouver, B. C., engrs. CD 9/8.

BUILDINGS—BA

▲ **Ont., Toronto**—SCHOOL—BA 10/30—Toronto Bd. Educ., 155 College St., pre-cast frame Annette St. Public School. $1,200,000. Plans deposit $100. Dunlop, Wardell, Matsui & Aitken, 3341A Bloor St. W., archts. James S. F. Ma & Assocs., 4894 Dundas St. W., engrs.

▲ **Ont., Petawawa** — HOUSING—BA 11/3—Central Mortgage & Housing Corp., 650 Lawrence Ave. W., Toronto, (A) 96 housing units complete with services and outside works, over $750,000, Plans deposit $100; (B) 101 housing units complete with services and outside works, over $750,000, Plans deposit $100; 203 housing units complete with services and outside works, over $1,000,000.

HEAVY CONSTRUCTION—LB & CA

▲† **Arden Eng. Co., Inc.**, 60 Taylor Dr., East Providence, R. I., CA $2,479,621, Central Heating and Power Plant and heat distr. lines, Ernest Harmon Air Force Base, Eng 30-347-59-38, STEPHENVILLE, NEWFOUNDLAND. U. S. Eng., 346 Broadway, New York 13, N. Y., U. S. A. Bids Sept. 10. CD 9/16, under LB.

BUILDINGS—LB & CA

▲ **Louis Donolo, Inc.**, 8320 St. Lawrence Blvd., Montreal, Que., CA Est. $1,250,000, 12 story PARKING GARAGE, Stanley St., MONTREAL, QUE. Sun Automatic Parking Ltd., c/o Dr. John Hartman, Rm. 1022, 132 St. James St., Montreal, Que. Colin H. Copeman, 1117 St. Catherine St. W., Montreal, Que., archt. Awarded Oct. 5.

LATIN AMERICA

HEAVY CONSTRUCTION—LB & CA

▲† **PANAMA**—Bureau P. Rds., Office Minister P. Wks., Panama City. Bids opened 10/7.

Oman, Farnsworth & Wright, 625 Madison Ave., New York, N. Y., U.S.A., LB $1,381,920, (6 bidders), Panama Proj. 15-S—Inter-American Hy. from Penonome to Aguadulce, Province of Cocle. CD 9/18.

▲ **Ingenieros Contratistas Generales S.A., Andes Constructora S.A., Cilloniz, Olazabal y Urquiaga S.A., Florez Y Costa S.A., and Grana and Montero S.A.**, CA $3,672,000, runway, taxiways and other facilities for handling jet aircraft at new airport, PERU. Commercial Aviation & Airports Corp., Govt. of Peru, Lima, Peru. Bids Sept. 21. CD 8/18.

▲ **Caribbean Bechtel Ltd.** (Sub Bechtel Corp., 220 Bush St., San Francisco, Calif. U. S. A.) CA est. $18,000,000, refinery addns., incl. 100,000 bbl. per day TOPPING UNIT, 15,000 bbl. per day catalytic reformer, and 20,000 bbl. per day hydro treater, tanks, pipelines, utilities and jetty, POINTE-A-PIERRE, TRINIDAD. Texaco, Inc., 135 E. 42nd St., New York, N. Y., U. S. A.

BUILDINGS—LB & CA

▲ **Lucas Sarcinella e Hijos, M. de Rosas**, 738 Mendoza, Argentina, CA Est. $2,500,000, 15 story OFFICE, APARTMENT AND SHOPPING CENTER, MENDOZA, ARGENTINA. Tonsa S.A.C.I.F.I., Florida 260, Buenos Aires, Argentina. Ing. Civ. German Gutman, Las Heras, 3807, Buenos Aires, Argentina, engrs.

PROPOSED PROJECTS

WATER SUPPLY

▲ **Colo., Denver**—Bd. Water Comrs., 144 West Colfax, Denver, voted $40,000,000 bonds Oct. 6:
Dillon Dam, $13,700,000-$26,100,000.
11 Mile Canyon imprvs. near Hartzel, $678,000.
South Platte Diversion Dam, $1,500,000.
Conduit 20 extens., near Watertown, $1,500,000.
South Boulder Creek imprvs., near Pine Cliff, $136,000.
South Platte channelwork near Grant, $2,898,000.
William Fork collection system near Parshal, $600,000.
Ashland Reservoir roof near Edgewater, $984,000.

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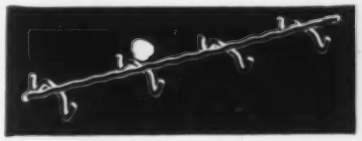

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Wynetka Clearwater reservoir near Littleton and in or near Denver, $393,000.
Conduit 29, $5,000,000.
Conduit 27, $100,000.
Conduit 28, Part 2, $1,000,000.
Conduit 28, Part 3, $1,000,000.
Marston filter plant, $500,000.
Marston pumping plant, $689,000. CD 8/5.

▲ **Tex., Fort Worth**—Tarrant Co. W.C. & I.D. No. 1, Danciger Bldg., bond election Dec. 2, water reservoir on Cedar Creek approx. 90 mi. pipe line near Corsicana. $55,000,000. Freese, Nichols & Endress, 407 Danciger Bldg., consult. engrs. CD 9/11.

SEWERS, WASTE DISPOSAL

▲ **Calif., Sacramento**—Northeast Sacramento County Sanitation Dist., c/o County Dpt. P. Wks., 827 7th St., $12,500,000 bond election Nov. 3 to finance first and 2nd stage of $22,800,000 master sewerage sys. and sewage treatment plant for Carmichael, Fair Oaks, Orangevale and Citrus Heights. Dewante & Stowell, 916 21st St., consult. engrs.

▲ **Fla., Ormond Beach**—City, City Hall, sanitary sewerage system, $3,100,000. To go ahead July 1960. CD 2/5/54.

▲ **Iowa, Sioux City**—City Hall, sewage treatment plant, $6,000,000. Howard R. Green Co., 213 Beaver Bldg., Cedar Rapids, and Buell & Winter, 508 Insurance Exch. Bldg., consult. engrs. CD 10/31/57.

▲ **Que., Cap de la Madeleine**—Le Conseil Municipal du Cap de la Madeleine, Que., aqueduct and sewer work various locations in city. $1,744,000. R. Marcoux, city engr.

▲ **Que., Montreal**—City, City Hall, 4th and 5th sections of St. Pierre Collector Sewer, between Irwin St. and Brock Ave. to Rockfield hydro substation. $3,100,000.

BRIDGES

▲ **CALIFORNIA**—California Toll Bridge Auth., 151 Fremont St., San Francisco,
San Mateo and Alameda Counties—reconstruction San Mateo-Hayward Bridge, over San Francisco Bay. $25,000,000.

STREETS AND ROADS

▲ † **Alaska**—Bureau P. Roads, Federal Bldg., Juneau, 67.5 mi. grading, drainage Sterling Highway from Anchor River to Soldotna. $4,148,000. Bids in Spring. CD 4/10/58.

▲ **D. C., Wash.**—D. C. Govt., Dpt. Highways, 499 Pa. Ave. N. W., Southwest Freeway, South Capitol to 14 Sts., Washington Channel, $27,500,000, Gannett, Fleming, Corddry & Carpenter, 700 N. Front, Harrisburg, Pa., consult. engrs., CD 9/5/58; repaving Michigan Ave., 4 St. N. E. to D. C. line incl. railroad grade separator structure, $3,000,000, Vogt, Ivers & Seaman, 34 W. 6 St., Cincinnati, O., consult. engrs., CD 9/5/58; Southeast Freeway, South Capitol St. to 7 St. S. E., $10,225,000, Richardson, Gordon & Assocs., 3 Pennsylvania Center Plaza, Phila., Pa., consult. engrs., CD 9/5/58; paving, repaving and surfacing various locations in D. C., $674,000; changing grading structures various locations in D. C., $100,000; sidewalk and alleys, various locations, $400,000; imprvs. to unpaved streets, various locations $300,000; resurf. various locations (heater method) $1,016,000; curb and gutter work, various locations, $431,000; grading various locations in D. C., $100,000.

▲ **OHIO**—Dpt. Hys., State Dpt. Bldg., Columbus, Zone 15,
Crawford Co.—6.82 mi. by-pass Rte. US 30-N around Bucyrus and Crestline first section 29 mi. project. $18,000,000. To go ahead July 1961.

▲ **OHIO**—Dpt. Hys., State Dpt. Bldgs., Columbus, Zone 15,
Lake Co.—relocation Heisley Rd. to link Expressway interchange with Headlands State Park, Painesville, $2,116,946. Capitol Engineering Assocs., Dillsburg, Pa., consult. engrs. Bids in about two months.

▲ **O., Cleveland**—Comrs. Cuyahoga Co., 451 County Admin. Bldg., 1219 Ontario St., Zone 13, wid'n., imprv. W. 130 from Bagley Rd. to 1,000 ft. north Brookpark Rd. $2,569,000. CD 11/11/58.

▲ **QUEBEC**—Roads Dpt., Province of Quebec, Parliament Bldgs., Quebec City,
La Tuque—road between La Tuque-Cleva-Senneterre. $3,000,000.

EARTHWORK, WATERWAYS

▲ **Alabama**—U. S. Eng., 2301 Grant St., Mobile, Holt Lock and Dam on Warrier River. $33,000,000. $146,000 appropriated for planning.

▲† **Arkansas**—U. S. Eng., 616 South Boston Ave., Tulsa, Okla., Gillham Reservoir, Cossatot River. $32,000,000. $78,000 appropriated for planning.

▲ **California**—San Benito County Water Conservation & Flood Control Dist., 3220 Southside Rd., Hollister 120 ft. dam-earthfill, San Benito River, $1,675,000. Creegan & D'Angelo, 1046 W. Taylor, San Jose, consult. engrs.

▲† **Illinois**—U. S. Eng., 420 Locust St., St. Louis, Mo., Navigation project Dam 27, Mississippi River between S. Louis and Dam 26. Total cost $6,300,000, $1,714,000 appropriated.

▲† **Indiana**—U. S. Eng., 830 West Broadway, Louisville, Ky., Mississinewa Reservoir on Mississinewa River, tributary of Wabash River, $22,000,000, ($146,000 appropriated for planning); Huntington Reservoir,

Wabash River, $14,200,000, ($24,000 appropriated for planning).

▲ **Kentucky**—U. S. Eng., 830 West Broadway, Louisville, No. 2 Green Reservoir, Green River. $8,470,000 ($49,000 appropriated for planning).

▲† **Massachusetts**—U. S. Eng., 425 Trapelo Rd., Waltham, Zone 54, Littleville Reservoir, Middle Branch Westfield River, Connecticut River Basin. $5,490,000 ($98,000 appropriated for planning).

▲† **Ohio and West Virginia**—U. S. Eng., 237 Fourth Ave., Huntington, W. Va., Belleville locks and dam, Ohio River. $54,400,000 ($122,000 appropriated for planning).

▲† **Pennsylvania**—U. S. Eng., 24th St. and Maryland Ave., Baltimore, Md., Tyrone Flood Control Proj., Little Juniata River. $9,000,000 ($83,000 appropriated for planning).

▲† **Texas**—U. S. Eng., 2132 Central Ave. S.E., Albuquerque, N. M., Pecos Flood Control Proj., steams and tributaries of Pecos River. $2,550,000 ($49,000 appropriated for planning).

AIRPORTS

▲† **Ga., Marietta** — OPERATION CENTER — Dpt. Air Force, The Pentagon Bldg., Wash. 25, D. C., underground combat operation center (SAGE) Kennesaw Mountain, near here. $15,000,000.

▲ **Ind., Evansville**—AIRPORT IMPRVS.—Metropolitan Airport Auth., City Hall, North-South Airport Runway extension and diagonal runway. $4,000,000. Leo Weiss, 312 N.W. 8th St., consult. engr. CD 2/28/45.

▲† **Mont., Glasgow**—NIKE HERCULES MISSILE SITES—U. S. Eng., City-County Airport, Walla Walla, Wash., Nike Hercules Air Defense Missile Sites Glasgow Air Force Base. $3,000,000-$4,000,000. Constr. 1959-1960.

▲† **Mont., Great Falls**—NIKE HERCULES MISSILE SITES—U. S. Eng., City-County Airport, Walla Walla, Wash., Nike Hercules Air Defense Missile Sites, Malstrom Air Force Base. $3,000,000-$4,000,000. Constr. 1959-1960.

▲† **N. Y., Cornwall**—UNDERGROUND COMBAT CENTER (SAGE)—U. S. Eng., 111 E. 16th St., New York, underground combat center (SAGE) Horse Mountain, near here. $15,000,000 ($4,950,000 funds released for excavation). CD 10/5.

▲† **N. D., Minot**—NIKE HERCULES MISSILE SITES—U. S. Eng., 1709 Jackson St., Omaha, Neb., Nike Hercules Air Defense Missile Sites, Minot Air Force Base. $3,000,000-$4,000,000. Constr. 1959-60. CD 9/25.

LATIN AMERICA

▲ **Argentina, Buenos Aires**—OIL REFINERY—Diadema S. A., Avda. R. S. Pena 788, plans by N. V. de Bataafse, Petroleum Maatschapij, Amsterdam, Holland, oil refinery. $21,800,000.

▲ **Argentina, Buenos Aires**—CHEMICAL PLANT—Duperial S. A., Paseo Colon 285, phtalic anhydride chemical plant. $7,000,000.

▲ **Argentina, Buenos Aires**—MOTORCAR PLANT—Industriales Argentinos Fabricantes de Automotores S. A., motorcar plant to produce Peugeot cars, investment by Imefbank, Geneva, Switzerland. $4,500,000.

▲ **Argentina, Buenos Aires**—PLANT—Franco Maspoli S. C., Chiasso, Switzerland, tool machinery plant, $4,600,000.

▲ **Argentina, Cordoba**—AUTO PLANT—Ind. Kaiser Argentina S. A., Paseo Colon 439, Buenos Aires, plans by Kaiser Engineers, archts.-engrs., Paseo Colon, 439, Buenos Aires, auto plant to produce medium-sized Renault Cars. $5,500,000.

▲ **Argentina, Gnral. Pacheco**—PLANT—Mauricio Silberberg S. A., Peru 1088, Buenos Aires, 50,000 tons annually electric cable mfg. plant. $8,200,000.

▲ **Argentina, La Plata**—Direccion de La Energia, Calle 7, Nr. 1175, irrigation work and drinking water installations. $3,300,000.

▲ **Argentina, La Plata**—Direccion de Obras Sanitarias, Calle 7, Nr. 1175, sanitary work, various locations. $4,800,000.

▲ **Argentina, La Plata**—Direccion de Vialidad, Calle 7, Nr. 1175, pavements various locations. $3,500,000.

▲ **Argentina, La Plata**—PLANT—Swift de La Plata S.A., Maipu 84, Buenos Aires, meat packing plant expansion. $5,840,000.

▲ **Argentina, Las Toscas**—MILL AND PLANT—Ingenio Corp. del Norte de Santa Fe, Santa Fe, plans by Cekop Co., archt.-engr., Warsaw, Poland, sugar mill and alcohol plant. $15,000,000.

▲ **Argentina, Matanza**—TRACTOR PLANT—Fahr Argentina S.A., Charcas 684, tractor plant. $3,250,000.

▲ **Argentina, Puerto Madryn**—CHEMICAL PLANT—Dr. Juan Lamazares, Cordoba 679, Buenos Aires, 290,000 tons annually soda solvay and caustic soda production chemical plant. $20,000,000.

▲ **Argentina, Rosario**—PLANT—Stadut y Cia, S.A.C., Irigoyen 330, Buenos Aires, plans by S. A. Andre Citroen, archt.-engr., Paris, France, motorcar plant to produce under license of S.A. Citroen, Paris, France. $4,150,000.

▲ **Argentina, San Martin** — SUGAR MILL — Coop de Caneros El Zapallar, Ltda., Resistencia, Chaco, sugar mill. $2,000,000. Cekop Co., Warsaw, Poland, engr.

▲ **Argentina, Tucuman**—PLANT—Ledesma S.A., Corrientes 378, Buenos Aires, cellulose and paper plant from sugar bagasse, $1,500,000. Parsons & Whittemore, Inc., 250 Park Ave., New York, N. Y., U. S. A., engr. making study.

(Continued on page 74)

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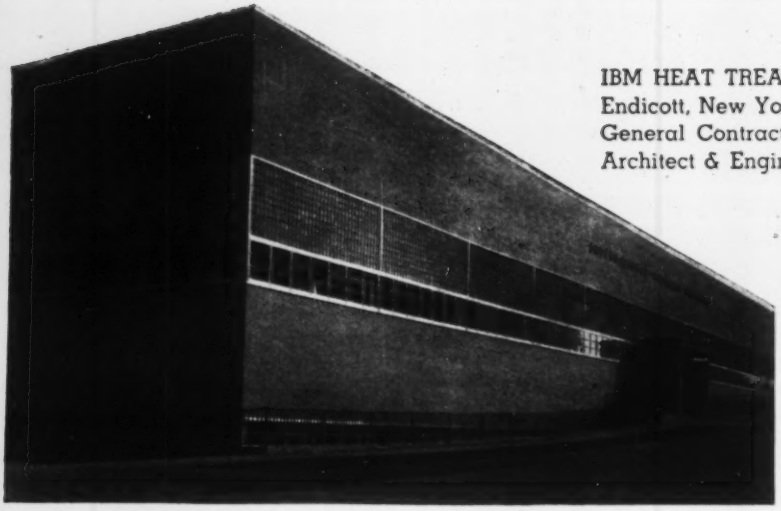

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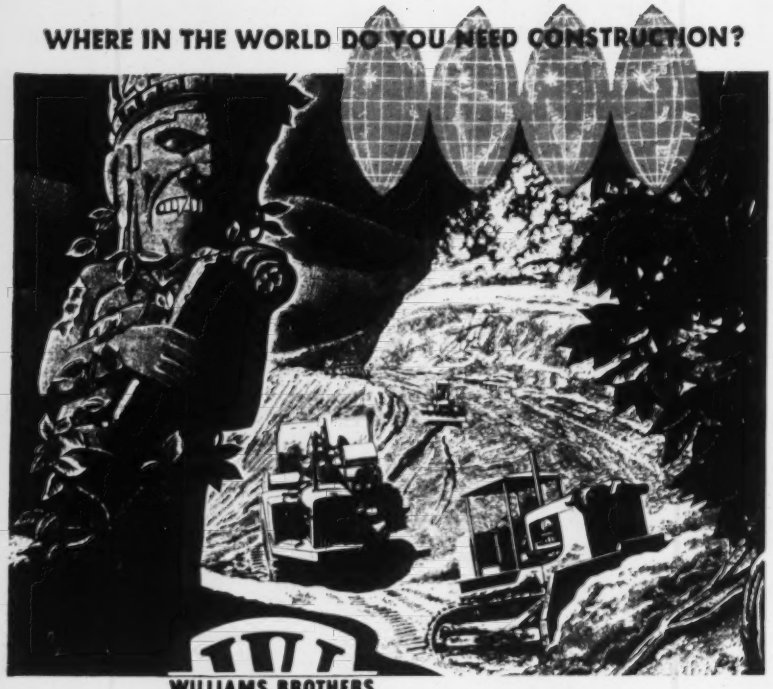

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(Continued from page 71)

FOREIGN

▲ **Spain**—GAS PIPE LINE—Sindicato de Gas, Paseo del Prado, Madrid, gas pipe line, Irun-Bilbao. Over $3,000,000.

▲ **Spain, La Coruna**—SHELTER-PIER—City, Ayuntamiento, shelter-pier, Las Corunas Harbor, $2,500,000.

▲ **Spain, Madrid** — AIR TERMINAL — City Plaza del Ayuntamiento, air terminal adjacent to airfield of Barajas. $2,000,000.

▲ **Spain, Mallorca**—AIRFIELD—City, Ayuntamiento de Mallorca, airfield, $2,000,000.

▲ **Thailand, Bangkok** — RAILWAY IMPRV. — National Railway Organization, Bangkok, National Railway imprv. replacement outworn tracks almost throughout the country. $50,000,000.

PUERTO RICO

▲† **Puerto Rico**—RADAR ANTENNA—Advanced Research Projects Agency Dpt. Defense, Pentagon, Wash., D. C. U. S. A., 1,000 ft. high radar antenna, $4,500,000. Cornell University, Ithaca, N. Y. consult. engr.

AMERICANS ABROAD

▲ **India**—PLANT—Firestone Tire & Rubber Co., 1200 Firestone Parkway, Akron, O., U. S. A., and Kilachand Devchand Co., Private Ltd., Bombay, synthetic rubber plant. $30,000,000.

PUBLIC BUILDINGS

▲† **Ala., Tuskegee**—SERVICES—Veterans Admin., Munitions Bldg., Wash., D. C., modernization Phase 3, Special Services Bldg. $1,500,000 (appropriated).

▲ **Calif., Whittier**—SCHOOL—Whittier School Dist., 902 W. Washington Blvd., plans by Kistner, Wright & Wright, 1125 W. 6th St., Los Angeles, Friendly Hills High School. $2,250,000. CD 6/18.

▲ **Conn., Hartford**—COLISEUM—City, City Hall, $4,000,000 bond election Nov. 3, coliseum in Constitution Plaza Redevelopment area. $3,850,000.

▲ **Conn., Hartford**—SCHOOL—Town, Bd. Educ., 249 High St., plans by Willard Wilkins, 945 Asylum Ave., North East Elementary School. $2,200,000. Loomis & Loomis, 252 Broad St., Windsor, consult. engrs. CD 10/19.

▲ **Ga., Decatur**—SCHOOLS—De Kalb County Bd. Educ., voted $11,500,000 bonds Oct. 6, schools. CD 8/24.

▲ **Ind., Indianapolis**—SCHOOL Bd., 150 N. Meridian St., School No. 94, 2701 Devon, $700,000; Northeast High School, 46th and Arlington, $4,500,000; Northwest High School, W. 34th and Moeller, $3,000,000.

▲† **Ky., Paradise**—POWER PLANT—Tennessee Valley Authority, New Sprankles Bldg., Knoxville, Tenn., 600,000 kw. steam power plant, Green River. $100,000,000.

▲† **Md., Perry Point** — BUILDING, etc. — Veterans Admin., Munitions Bldg., Wash., D. C., Building 23H alterations and sewage disposal plant. $1,500,000 (no appropriation).

▲† **Mass., Bedford** — BUILDINGS — Veterans Admin., Munitions Bldg., Wash., D. C., Buildings 7 & 61 alterations. $1,500,000 (no appropriation).

▲ **Mich., Erie**—SCHOOL—Mason Consolidated Schools, Erie, $1,850,000 bond election Oct. 27, high school. $2,326,000.

▲ **Mich., Oak Park**—SCHOOL—School Dist. of City of Oak Park plans by O'Dell, Hewlitt & Luckenback, 950 Hunter Ave., Birmingham, Clinton Elementary School addn. $1,564,000. CD 9/4/56.

▲ **Mich., Warren** — SCHOOLS — Warren Consolidated Schools, plans by Tarapat, MacMahon, 894 S. Adams, Birmingham, Junior High and elementary schools addns. $1,765,000. Clair W. Ditchy, 1232 S. Woodward, Royal Oak, and Wakly-Kushner, 21429 Mack, St. Clair Shores, consult. engrs. CD 3/27.

▲ **Minn., Rochester**—SCHOOLS—Bd. Educ., voted $5,000,000 bonds Sept. 29, schools. CD 9/11.

▲† **Mont., Fort Harrison**—HOSPITAL—Veterans Admin., Munitions Bldg., Wash., D. C., modernization, Phase 1, hospital, alterations to dining hall and kitchen, sewage disposal plant. $5,000,000 (no appropriation).

▲ **N. J., Moorestown**—SCHOOL—Bd. Educ., Moorestown Twp., plans by Micklewright & Mountford, Stuyvesant Ave. and Prospect St., Trenton, Senior High School, $2,000,000. CD 6/10/57.

▲ **N. C., Oteen**—CLINIC, etc.—Veterans Admin., Munitions Bldg., Wash., D. C., modernization, Phase 1, clinic and 400-bed hospital. $8,500,000 (no appropriation).

▲† **O., Dayton**—BOILER PLANT, etc.—Veterans Admin., Munitions Bldg., Wash., D. C., modernization, Phase 2, boiler plant conversion of electrical sys., connecting corridors and misc. work. $2,000,000 (no appropriation).

▲ **Pa., Aliquippa** — SCHOOLS — Hopewell-Independent-Raccoon Joint School Dist., Aliquippa, high school (Proj. 503) $2,250,000, elementary school addn. (Proj. 405) $576,000, elementary school (Proj. 405A) $480,000.

▲ **Pa., Connellsville** — SCHOOL — Connellsville Joint School Dist., high school addns., alterations, (Proj. 488). $1,600,000.

▲† **S. D., Fort Meade** — LAUNDRY, etc. — Veterans Admin., Munitions Bldg., Wash., D. C., modernization, Phase 3, laundry, dining hall and kitchen. $1,500,000 (no appropriation). CD 8/29/57.

† **Tenn., Murfreesboro**—SPECIAL ACTIVITIES—Veterans Admin., Munitions Bldg., Wash., D. C., modernization, Phase 2, special activities bldg. addn. $750,000 (appropriated). CD 5/7/58.

▲ **Tex., San Antonio**—JAIL—Bexar Co., Comrs. Court, Courthouse, plans by Weidner & Walther, 610 Alamo National Bldg., county jail, $3,850,000. Beretta, Greenslade & Assoc.; Inc., 1927 N. St. Mary's St., and Reynolds & Morgan, Insurance Bldg., consult. engrs. CD 6/11.

▲ **Tex., Spring Branch**—SCHOOLS—Spring Branch Ind. School Dist., 9000 Westview St., Houston, high school $2,000,000, Junior High School $1,750,000, Elementary School No. 1 $700,000, Elementary School No. 2 $550,000, Elementary School No. 3 $650,000, Elementary School No. 4 $750,000, Elementary School No. 5 $800,000. CD 10/11/57.

▲ **Ont., Toronto**—PARKING GARAGE—Parking Auth. of Toronto, 36 Adelaide St. W., 7 block, 600-car underground parking garage over proposed rapid transit subway on two levels, University Ave. $1,000,000.

COMMERCIAL BUILDINGS

▲ **Alaska, Juneau**—HOTEL—Baranof Hotel, Juneau, plans by Howard T. Harstad & Assoc., 200 5th Ave., Seattle 1, Wash., hotel enlargement, alterations. $3,000,000.

▲ **Ariz., Tucson**—HOME—Jack E. Young & Assocs., 5030 E. Broadway, plans by Ambrose, Swanson & Assocs., 2447 N. Stone Ave., 500 home subdivision, Fiesta Park, S 12 Ave. near Valencia Rd. $8,000,000.

▲ **Calif., Millbrae**—BOWLING ALLEY—Harold Dobbs, 351 California St., San Francisco, plans by Goodwin B. Steinberg, 302 Main St., Los Altos, bowling alley, Kings Bowl, El Camina Real, across from Kings Restaurant. $1,500,000. CD 6/25.

▲ **Calif., San Francisco**—HOTEL—Owner, c/o J. E. Moser, Realtor, 68 Post St., plans by August E. Waegemann, 20 2nd St., 23 story, 4-sublevels, 350,000 sq. ft., steel frame hotel, California and Powell Sts. $8,000,000. CD 1/29/58.

▲ **Conn., Hartford**—HOSPITAL—Mount Sinai Hospital, 500 Blue Hills Ave., hospital addn. $2,000,000.

▲ **Conn., Meriden**—HOUSES—Joseph F. Carabetta & Bros., 47 Hill St., 74 houses "Tanglewood Estates". $1,850,000.

▲ **D. C., Wash.**—HOTEL—American Mortgage Investment Co., Woodward Bldg., plans by Corning & Moore, 1302 18 St. N.W., 6 story hotel, Wisconsin Ave. and N St., N.W. to be known as "Old George Town Inn". $2,000,000.

▲ **Ill., Chicago**—APARTMENT—O. T. Hogan & Assocs., c/o L. R. Solomon and J. D. Cordwell & Assocs., archts., 61 W. Superior St., two 25 story, 500 Unit apartment Hollywood Ave. and Sheridan Rd. $9,000,000. Bids summer 1960.

▲ **Ky., Louisville**—APARTMENT—J. Graham Brown, Brown Hotel, 4th and Broadway, Zone 2, 12 story apartment adjoining Brown Suburban Hotel, Bardstown Rd. $2,000,000.

▲ **Ky., Louisville**—HOSPITAL—Jewish Hospital, 217 E. Chestnut St., plans by Joseph & Joseph, 202 Speed Bldg., Zone 2, 2 and 3 story, 32,000 sq. ft., brick, concrete block, rein.-con. hospital addn. and modification. $2,000,000. E. R. Ronald & Assoc., 554 S. 3rd St., Zone 2, consult. engrs. CD 10/14/58.

▲ **Mass., Revere**—SHOPPING CENTER—Theodore & Richard Berenson Assoc., c/o Sumner Schein, archt., 271 Huntington Ave., Boston, shopping center, New England Expressway, Airport Square Rd. C-1. $1,500,000. Bids Nov. 1959.

▲ **Minn., South St. Paul**—SHOPPING CENTER—O. Thompson Constr. Inc., 12201 Minnetonka Blvd., 180,000 sq. ft. Cottage Grove Shopping Center, Thompson Grove Area. $1,700,000.

▲ **Mo., Creve Coeur**—SHOPPING CENTER—Owner, c/o Fred R. Rapp Realty Co., Lindbergh Blvd. and Olive St. Rd., plans by Kenneth E. Wischmeyer, 911 Locust St., St. Louis, Zone 1, split level, brick, stone, steel, air-conditioned shopping center, incl. supermarket, junior department store, several other shops, etc. Olive St. and Ballas Rd. Over $3,000,000.

▲ **N. J., Asbury Park**—APARTMENTS—Limited Dividend Bldgs., 135 East 65 St., New York, N. Y., plans by Tito Di Vincenzo, 135 E. 65 St., New York, N. Y., two 14-story apartments, Sewell-Bond-Emory-Munroe block. $5,000,000.

▲ **N. J., Lakewood**—RESIDENTIAL DEVELOPMENT—Kaplan & Reilly, Lakewood residential development (150), Pine Blvd., etc. $2,000,000.

▲ **N. J., Newark**—APARTMENT, etc.—Newark Plaza Development Corp., c/o M. B. Weinstein, 1646 West York St., Phila., Pa., plans by Stonorov & Haws, 1915 Architects Bldg., Phila., Pa., 30 story tower apartment, and sixteen 15 story apartments, $60,000,000; 20 story office, west side of Mulberry St., $25,000,000; motel, Mulberry St., Clinton and Commerce Sts., $2,000,000; stores, Edison Place and Mulberry St., $3,000,000.

▲ **N. J., Newark**—CLASSROOM AND LABORATORIES—Seton Hall University, South Orange Ave., South Orange,

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GENERAL INFORMATION

Job Location . . . Zanesville Interceptor Sewer Zanesville, Ohio
Engineer . . . . . Floyd G. Browne & Associates, Marion, Ohio
Contractor . . . . Roger Au & Sons Mansfield, Ohio
Materials . . . . . 15,000 Ft. V.C. Pipe, A.S.T.M. C-13 with Presto-SEAL joints, 6" to 24" diameter inclusive.

TEST DATA

Date of Test . . . . . June 18, 1959
Size of Line . . . . . 24" V.C. Pipe
Length of Line . . . . . 250 Ft.
Type of Test . . . . . Exfiltration
Allowable Loss . . . . . 500 Gal/In/Mi/day

RESULTS

After line was filled only 90 min., loss was approx. 1/3 the allowable.

*T.M. Reg.

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college classroom and laboratories, McCarter Hy. $2,350,000.

▲ **N. Y., New York**—APARTMENT—404 East 72nd St. Corp., 330 E. 80th St., Zone 21, plans by Philip Birnbaum, 12 E. 48th St., Zone 17, two 20 story apartments, 404-10 East 72nd St. and 414-20 East 72nd St. $2,800,000.

▲ **O., Akron**—MOTEL, etc.—Akron & Chicago Co., c/o Leonard M. Server, 189 W. Randolph, Chicago, Ill., Executive House of Akron: 200 room motel, incl. swimming pool, 350 car parking, State and Water Sts. $2,500,000.

▲ **Pa., Chester**—HOMES—W. H. Pritchard, Newtown Square, Pa., 174 row homes, Green St., etc. $2,000,000.

▲ **Pa., Phila.**—APARTMENT—Hyman Korman, Inc., 6401 Castor Ave., apartment. $1,500,000.

▲ **Tex., Houston**—SHOPPING CENTER—Tom Schler, c/o 2017 Milam St., "Schierwood Shopping City" Shopping Center $2,500,000; sanitary storm sewers $128,000; water system $65,000; paved area and auto center site earthwork $110,000. Hiram Clark Road.

▲ **Que., St. Hyacinthe**—SHOPPING CENTER—Centre d' Achats de St. Hyacinthe, c/o Adrien Berthiaume, archt., 111 Hotel de Ville St., Beloeil and Maurice Desnoyers, archt., 1705 Girouard St., St. Hyacinthe, shopping center, Laurier Blvd. $1,500,000.

▲ **Que., Three Rivers**—SHOPPING CENTER—Garden Dale Realties Ltd., 6700 Cote des Nieges Rd., Montreal, shopping center, Blvd. Royale, $2,000,000.

▲ **Que., Three Rivers**—SHOPPING CENTER—Riverton Development Co., c/o Reuben Fisher, archt., 3177 St. Sulpice Rd., Montreal, shopping center, Banlieue des Trois Rivieres near Blvd. Royale, $2,000,000.

INDUSTRIAL BUILDINGS

▲ **Ark., North Little Rock**—GRAIN ELEVATOR—Adkins-Phelps, Inc., 403 Magnolia, million-bushel grain elevator, storage and loading docks, warehousing and shipping, Arkansas River bank, $3,000,000-$5,000,000.

▲ **Calif., San Francisco**—GARAGE—Portsmouth Plaza Corp., c/o San Francisco City and County Bd. Supervs., 3 level, 800 car parking garage, Kearney St. between Clay and Washington Sts. $3,000,000. To begin in Oct. 1959.

▲ **Colo., Golden**—PLANT—Boise Cascade Corp., Box 200, Boise, Idaho, 1 story, 50,000 sq. ft. plant mfg. corrugated shopping containers, near here. Approx. $1,500,000.

▲ **N. J., Wayne**—INDUSTRIAL BUILDINGS—Fidelity Engineering Co., Inc., 149 Hackensack Ave., Hackensack, 12 industrial bldgs., Rte. 46 near Mountain View, $5,000,000.

▲ **O., Toledo**—STORAGE ELEVATOR, etc.—The Andersons, Illinois Ave., Maumee, O., 3 million bu. grain storage elevator, rail connections, etc., $2,000,000, Work to start 1962 or 1963; warehouse-import warehouse, over $500,000, Work to start 1960 or 1961, above work on west bank Maumee River between New York Central and Old Fassett St. Bridges.

▲ **Ont., Oakville**—PLANT—Ford Motor of Canada, Ltd., 120 Bloor St. E., Toronto, plans by Allward & Gouinlock, 245 Davenport Rd., Toronto, 7-story, head plant office, SE corner Queen Elizabeth Highway and Ninth Concession Rd., near here. $5,500,000. CD 11/8/51.

▲ **Ont., Port Arthur**—GRAIN ELEVATOR—United Grain Growers Ltd., Hamilton Bldg., 395 Main St., Winnipeg, Man., 110 ft. high grain elevator at waterfront. $2,000,000.

UNCLASSIFIED

▲ **Arizona**—TRANSMISSION LINE—Arizona Public Service Co., 50 S. 3 Ave., Phoenix, 155 mi. 230,000 volt transmission line from Flagstaff to Arizona-Utah border to connect with Utah Power & Light Co. system, at Glen Canyon Dam. $7,400,000.

▲ **Ark., North Little Rock**—ELECTRICAL SYSTEM—City, City Hall, rehabilitate electrical system, $2,100,000. Burns & McDonnell, 95 and Troost Sts., Kansas City, Mo., consult. engrs. CD 9/22.

▲ **Mo., St. Louis**—CIVIC CENTER, etc.—Civic Center Redevelopment Corp., c/o James P. Hickok, pres., First National Bank in St. Louis, 510 Locust St., Zone 1, civic center, Busch Memorial Stadium, parking, motel, etc. Market, Poplar, 3rd and 8th Sts. $22,000,000.

▲ **N. J., Elizabeth**—AIR-RAID SHELTER AND PARKING GARAGE—City, City Hall, plans by Albert A. Kaufmann, 252 North Broad St., 3-level, 540,000 sq. ft. combination air-raid shelter and parking garage in Jefferson Park, Jefferson and Madison Aves. $10,000,000.

▲ **Pa., Abington**—PARK—Abington Twp., plans by Allen Organization, County Bank Bldg., Bennington, Vt., first phase Alverthorpe Public Park. $2,500,000.

▲† **Pa., Phila.** — AIR-CONDITIONING — U. S. General Services Admin., 250 Hudson St., New York, N. Y. and 2nd and Chestnut Sts., Phila., Pa., air-conditioning for General Post Office, 30th and Market Sts. $3,750,000. Kuljian Corp., 1200 N. Broad St., Phila., Pa., consult. engrs. CD 4/28/49, under Public Buildings.

▲ **Utah**—TRANSMISSION LINE—Utah Power & Light Co., 36 S. State St., Salt Lake City, 300 mi. 230,000 volt transmission line from Salt Lake City to Arizona border to connect with Arizona Public Service Co. system, at Glen Canyon Dam. $15,500,000.

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Bids—Low Bids—Contracts—Second Section

NEW ENGLAND

HEAVY CONSTRUCTION—BA

STATE HIGHWAY LETTINGS

STREETS AND ROADS

October 27 Massachusetts October 28 Maine

HEAVY CONSTRUCTION—LB & CA

▲ **CONNECTICUT**—State Hy. Comr., 170 Douglas St., Hartford.

Arute Brothers, Inc., 560 South Main St., New Britain, Conn., CA **$3,829,690**, concrete paving 17,607 lin. ft. relocation Rte. U. S. 6, incl. 9 bridges, from 2,750 ft. east of Rte. 25 to Rte. 6, west of Sandy Hook, Fed. Aid Proj. L-84-1 (6) 12, Project 96-74, Newtown. Bids Sept. 8. CD 9/10, under LB.

MIDDLE ATLANTIC

HEAVY CONSTRUCTION—BA

STATE HIGHWAY LETTINGS

BRIDGES

October 27 Maryland October 28 Pennsylvania

STREETS AND ROADS

October 28, 29 Pennsylvania November 4, 5 New Jersey

BUILDINGS—BA

▲ **N. Y., New York**—PARKING GARAGE—BA 11/10—Dpt. P. Wks., Room 1800L, Municipal Bldg., Zone 7, public parking garage, Jerome Ave. and E. 190th St., Borough of Bronx. Contract 1, general constr.; Contract 2, plumbing work; Contract 3, electrical work and lighting fixtures. Plans deposit $20. CD 1/12.

HEAVY CONSTRUCTION—LB & CA

▲ **NEW YORK**—State Dpt. P. Wks., State Office Bldg., Zone 1. Bids opened 10/15.

N. Y.—**Johnson Drake & Piper, Inc.**, 86 Trinity Place, N. Y. 6, N. Y., LB **$3,046,272.75**, est. $4,093,000 (7 bidders), b. conc. Type 2A 0.9 mi., two-37 ft. var. wide 1.38 mi., 2 hy. seps. comp I-beams 160.5 ft. & 160.5 ft. 2 ped. overpasses comp. I-beams 424.5 ft. & 129 ft. 1 br. rein.-con. twin box 29.3 ft. Lake Shore-Lackawanna City, SH 5019 Rte. 5 FARC 59-89 Proj. U-750(15), Erie Co.;

N. Y.—**Gilbane Bldg. Co.**, 90 Calverly St., Providence, R. I., LB **$4,065,519.50**, est. $5,250,000 (6 bidders), b. conc., pavement Type 1A 5.03 mi., misc. work 0.04 mi., 2 hy. seps. comp. I-beams 166.5 ft. and 167.5 ft. 1 RR sep. comp. I-beam twin 2 sp. 160 ft. each 1 br. deck girder cant. type twin 5 sp. 710 ft. each Massena-Helena, Pt. 1, SH 1261 Raquette River Hogansburg Pt. 1, SH 1861 & Raquette River Hogansburg Pt. 2, St. Regis Indian Reservation Fort Covington, Pt. 1, SH 8396, Rte. 37 FARC 59-100, Proj. F-580(15), Franklin and St. Lawrence Counties;

N. Y.—**The Lane Const. Corp.**, 965 E. Main St., Meriden, Conn., LB **$2,888,073.73**, Est. $4,383,000 (15 bidders) b. conc. pavt. Type 1A (main line) 4.6 mi. acc. 5.37 mi. asphalt concrete Type 1A pavt. 0.44 mi. gr. grav. B.D.S.T. pavt. 3 hy. seps. comp. W.F. beams 6 sp. 441 ft., 4 sp. 325 ft. and 5 sp. 297.5 ft., 2 brs. rein.-con. boxes 20 ft. and 21 ft. Interstate Rte. 505 Section 7AB-1 (Jefferson Co. Line to SH 184) Int. Tour Rte. 81, FISH 59-19, Proj. I-81-3 (10) 130, Jefferson Co.;

N. Y.—**Peter Kiewit Sons, Inc.**, Box 224, Eastwood Station, Syracuse 6, N. Y., LB **$5,222,046.50**, Est. $7,056,000 (8 bidders), b. conc. Type 1A, 10.35 mi., b. conc. pavt. Type 1A, 1.27 mi. bit. mac Type 1, 0.14 mi. misc. work, 9 hy. seps comp. I-beams 121.5 ft., 120.3 ft., 298.5 ft., 253 ft., 131.3 ft., 129.7 ft., 293.8 ft., 1 RR sep. I-beam 251.9 ft., 2 brs. comp. I-beams 210 ft. and 210 ft. Br. rein.-con. twin box, 41 ft., Int. Rte. 505 (parish to Jefferson County Line) Pt. 2 and Pulaski-Williamstown, Pt. 1, SH 1288 (access reconst.) Rte. 81, FISH 59-22, Proj. I-IG 81-2 (26-119), Oswego Co.;

N. Y.—**The Lane Constr. Corp.**, 965 E. Main St., Meriden, Conn., LB **$6,522,959.21**, Est. $8,725,000 (14 bidders), 9 in. c. conc. 7.47 mi., 4.58 access 6 hy. seps. comp. beams, 6 sp. 343.3 ft., 3 sp. 127.8 ft., 3 sp. 136.3 ft., 3 sp. 130.1 ft., 3 sp. 126.1 ft. & 5 sp. 259.3 ft., 3 RR seps. comp. beams, 3 sp. 148.5 ft., 3 sp. 148.5 ft. and 3 sp. 141 ft. Int. Rte. 502 (Clifton Park to Malta) incl. access work SH 5519 and various town and county roads. Rte. 87, FISH 59-18. Proj. I-IG-87-3 (20) 169, Saratoga Co. CD 9/15.

BUILDINGS—LB & CA

▲ **Advertising Arts, Inc.**, 1157 E. Jersey St., Elizabeth, N. J., Owner Builds, **$5,600,000**, 200 HOUSES, Park Ave., MORRISTOWN, N. J. Water Pfeiffer, 109 Washington St., Morristown, N. J.; archt.

▲ **Costanza Co.**, 3001 Vineyard Lane, Baltimore, Md., LB **$3,489,700**, (8 bidders); Security HIGH SCHOOL, TOWSON, MD., Baltimore County Bd. Educ., Aigburth Rd., Towson 4, Md. Bids Oct. 13. CD 9/22.

▲ **Joseph F. Hughes & Co.**, 5 East Franklin St., Baltimore, Md., CA **$2,790,000**, Overlea SENIOR HIGH SCHOOL, Overlea, TOWSON, MD., Baltimore County Bd. Educ., Aigburth Rd., Towson 4, Md. Bids Sept. 17. CD 9/21, under LB.

SOUTH

HEAVY CONSTRUCTION—BA

STATE HIGHWAY LETTINGS

BRIDGES

October 30 Kentucky

STREETS AND ROADS

October 30 Kentucky

BUILDINGS—BA

▲ **Fla., Miami**—CRIMINAL COURT—BA 11/24—Bd. Comrs. Dade Co., Courthouse, Dade County Criminal Courts Bldg. Plans deposit $200 general contract. Extended date. Coda Assocs., 206 Roper Bldg., archts. CD 9/23.

HEAVY CONSTRUCTION—LB & CA

▲ **Western Pipe-Line, Inc.**, V.F.W. Bldg., Austin, Tex. CA **$3,240,000**, 81.7 mi. 26 in. natural gas line, KENTUCKY, INDIANA, OHIO. Texas Gas Transmission Corp., 416 W. 3rd St., Owensboro, Ky. CD 12/16/55.

MIDDLE WEST

HEAVY CONSTRUCTION—BA

STATE HIGHWAY LETTINGS

BRIDGES

October 27 Indiana

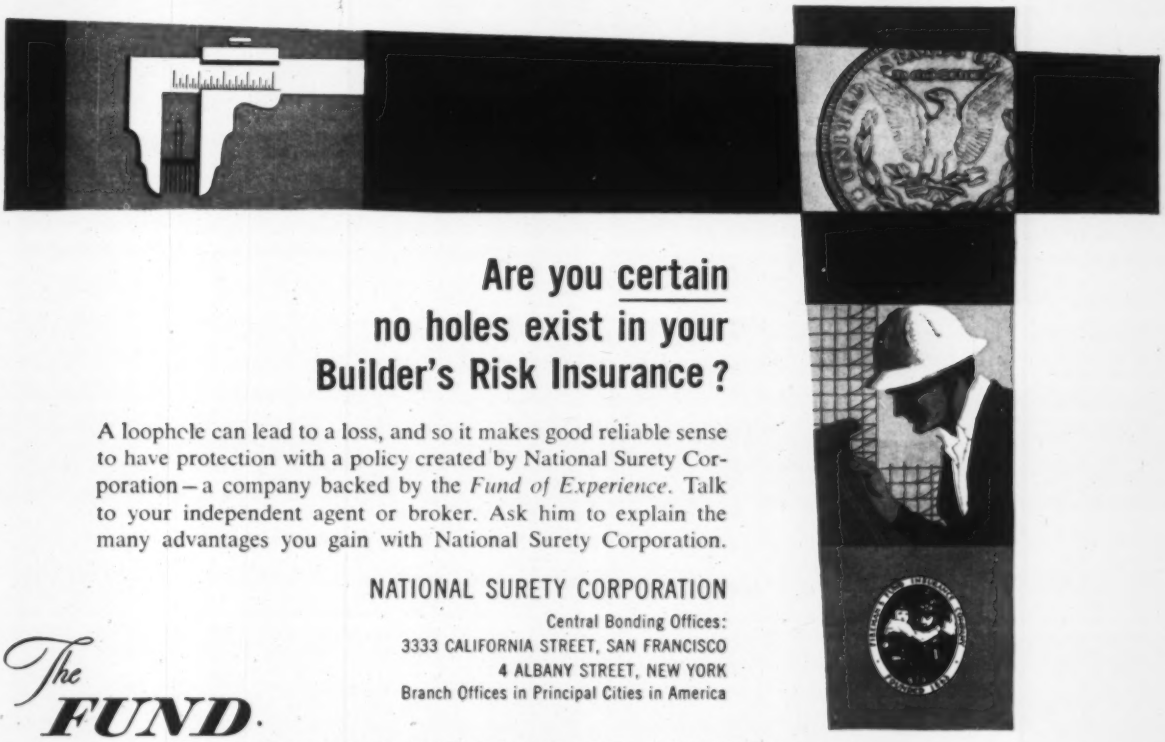
▲† **Ohio and West Virginia**—BA 11/19—U. S. Eng., 925 New Federal Bldg., Pittsburgh 19, Pa., locks, Pike Island Locks and Dam, Ohio River, CIVENG-36-058-60-11. CD 10/1.

HEAVY CONSTRUCTION—LB & CA

▲ **S. J. Groves & Sons**, 1104 Reynolds St., Springfield, Ill., CA **$4,427,292**, airport runway extension, O'Hare International Airport; 14R-32L, Park Ridge, CHICAGO, ILL. Dpt. Purchases, City Hall, Chicago 2, Ill. Bids Oct. 2, awarded Oct. 9. CD 10/8, under LB.

▲ **William E. Schweitzer & Co.**, 2207 Dodge Ave., Evanston, Ill., CA **$4,645,000**, est. $5,000,000, 2 story, 200x415 ft. rein.-con., steel hangar, dormitory and office, Chicago O'Hare International Airport, Spec., 80.85-59-106, Park Ridge, CHICAGO, ILL. Dpt. Purchases, City Hall, Chicago, Ill. Bids Sept. 9, awarded Oct. 1. CD 9/16, under LB.

(Continued on page 80)



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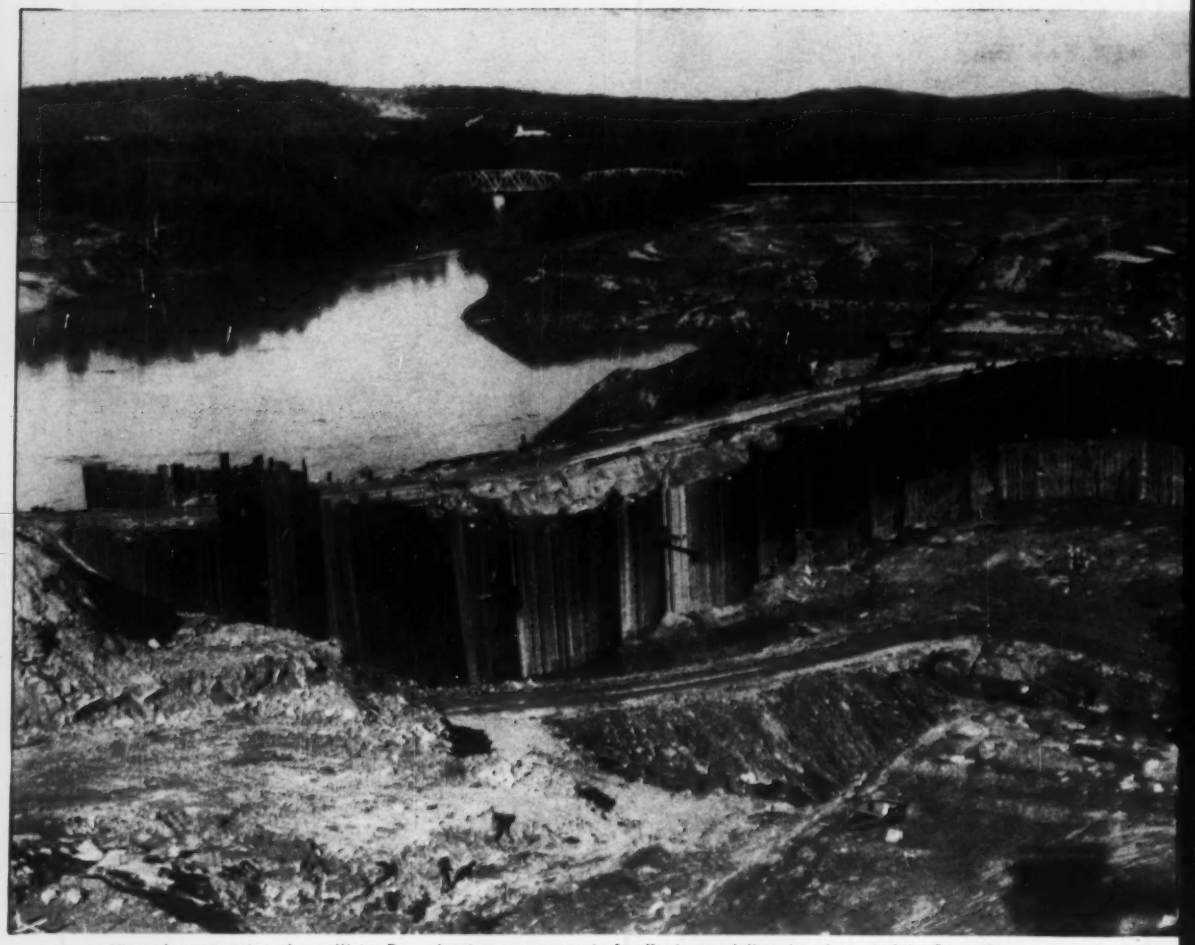

View of construction of new Weiss Dam showing arrangement of cofferdam and diversion channel of the Coosa River. Owner: Alabama Power Co. Project Superintendent: C. B. McCullar. Contractors: Morrison-Knudsen, Inc., Boise, Idaho and Moss-Thornton Company, Inc., Leeds, Alabama. Project Manager for Morrison-Knudsen: Mr. Harold Maxwell.

Alabama Power's new Weiss Dam starts with USS Sheet Steel Piling

The new Coosa River Development Program of the Alabama Power Company will include five dams and hydro-electric power plants between Rome, Georgia and Wetumpka, Alabama. The first of these is the Weiss Dam now under construction at Leesburg, Alabama. This $30 million project is scheduled for completion by mid-1961.

To get the work started, the contractor built a 19-cell cofferdam using 3,800 tons of USS MP-101 Sheet Steel Piling. This diverted the river and dried up the construction area. Each cell is 60.48 feet in diameter and about 60 feet high.

They drove the piling to solid rock through overburden 30 feet deep. Cells were filled with sand and gravel, which also provided a work road across the top of the cofferdam.

The diversion dam and power plant will require 143,000 cubic yards of concrete and 3,650 tons of reinforcing steel. The reservoir created by the dam will cover 45 square miles.

The excellent service rendered on this large cofferdam job is another example of the advantages offered by U.S. Steel's large production facilities and attention to customer's needs. When you want any type of piling—steel sheet piling or steel H-piles—call the U.S. Steel office near you. *USS is a registered trademark*

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Tennessee Coal & Iron — Fairfield, Alabama
United States Steel Export Company

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(Continued from page 77)

BUILDINGS—LB & CA

▲ **Frank Messner & Sons, Inc.**, 4612 Paddock St., Cincinnati, O., CA Est. **$3,500,000**, 69,000 sq. ft. RESEARCH LABORATORY addn., MIDDLETOWN, O. Armco Steel Corp., 703 Curtis St., Middletown, O. Dan Carmichael, 5 E. Long St., Columbus, O., archt.

▲ **Carl E. Erickson Co.**, 4657 N. Ravenswood Ave., Chicago, Ill., CA **$3,000,000**, 19 story, rein.-con. 180-unit APARTMENT, 360 N. Wellington Ave., CHICAGO, ILL. Herman A. Neiburger, 33 N. LaSalle St., Chicago, Ill. CD 8/26.

▲ **Federal Projects Corp., and Barton-Malow Co.**, 2631 Woodward Ave., Detroit 1, Mich., CA Est. **$22,000,000**, superstructure for POST OFFICE, 1551 W. Fort St. (leasing by Post Office Dpt.), DETROIT, MICH. U. S. Post Office Dpt., 12th and Pennsylvania Ave. N. W., Wash., D. C. Bids May 28. (Correction—contractor). CD 6/15, under CA.

MISSISSIPPI TO ROCKIES

HEAVY CONSTRUCTION—BA

STATE HIGHWAY LETTINGS

BRIDGES

October 30 Minnesota

STREETS AND ROADS

October 27 Colorado October 30 Minnesota
November 6 Kansas

▲† **Wyo., Cheyenne**—LAUNCHERS FOR ATLAS MISSILES—BA On Or About 11/24—U.S. Eng., 1709 Jackson St., Omaha 2, Neb., launchers for Atlas missiles at 9 sites, operational bases, 549-1 thru 549-9, Francis E. Warren Air Force Base, Inv. No. ENG-25-066-60-13. $20,000,000. Extended date. CD 10/2.

BUILDINGS—LB & CA

▲ **E. I. duPont de Nemours & Co.**, Beaumont Works, Nederland, Tex., Owner Builds, CHEMICAL PLANT to mfg. acrylonitrile for orlon, BEAUMONT, TEX.

FAR WEST

HEAVY CONSTRUCTION—BA

STATE HIGHWAY LETTINGS

STREETS AND ROADS

November 3 Idaho November 13, 18, 19 California

BUILDINGS—BA

▲ **Calif., Oakland**—SCHOOL—BA 11/10—Oakland City Unified School Dist., 1025 2nd Ave., Hill Area High School, Skyline Blvd. $4,000,000. Plans deposit $75. Warnecke & Warnecke, Financial Center Blvd., Oakland, archts. CD 1/17/58.

HEAVY CONSTRUCTION—LB & CA

▲ **Stolte, Inc., and Morrison-Knudsen Co.**, 8451 San Leandro St., Oakland, Calif., LB **$8,738,745**, est. $10,000,000 (13 bidders), highway railroad bridge over West Branch Feather River final link in relocation to clear way for Feather River Proj., Oroville Dam and Reservoir, highway portion 56 ft. wide, 2,731 ft. long, railroad portion 1,875 ft. long, Butte Co., 11 mi. north of Oroville, CALIFORNIA. State Dpt. P. Wks., 1120 N. St., Sacramento, Calif. Bids Oct. 14. CD 9/1.

▲ **Kemper Constr. Co. & McDonald & Kruse**, 3701 Overland Ave., Los Angeles, Calif., LB **$3,371,063** (5 bidders), Proj. No. 59, Unit 1, Central Business Storm Drain, portion Line A, line 1 and portion line H, LOS ANGELES, CALIF. Los Angeles County Flood Control Dist., 2250 Alcazar St., Los Angeles, Calif. Bids Oct. 9. CD 9/14.

▲ **Stolte Inc. & Fred J. Early Jr. Co., Inc.**, 369 Pine St., San Francisco, Calif., LB **$4,933,732** (3 bidders) 3 mi. 9 ft. wide, steel liner, concrete lining, concrete structure, tunnel and appurtenances, excavation work between Lafayette and Orinda, Contra Costa Co., OAKLAND, CALIF. East Bay Municipal Utility Dist., 2130 Adeline St., Oakland, Calif. CD 9/25/58.

CANADA

HEAVY CONSTRUCTION—BA

STATE HIGHWAY LETTINGS

STREETS AND ROADS

October 28 Ontario

BUILDINGS—LB & CA

▲ **Eastern Woodworkers Ltd.**, Brother St., New Glasgow, N. S., LB **$4,579,804** (5 bidders), 348 unit HOUSING, Mulgrave Park, HALIFAX, N. S. Central Mortgage & Housing Corp., 1032 Gottingen St., Halifax, N. S. Bids Sept. 24. CD 9/1.

PUERTO RICO

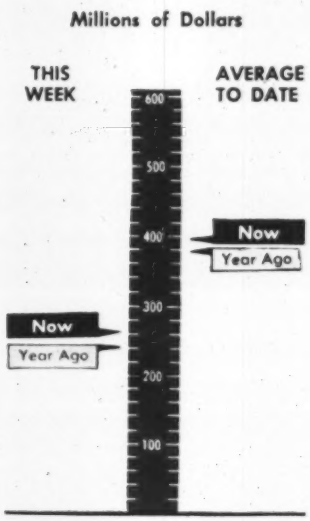
BUILDINGS—LB & CA

▲ **Hill Constr. Corp.**, Box 591, Bayamon, Puerto Rico, CA Est. **$3,200,000**, design and construct 450 unit HOUSING, BAYAMON, PUERTO RICO. Reparto Flamingo, Inc., Box 591, Bayamon, Puerto Rico.

(Proposal Advertisements see p. 90 to 92)

Construction Scoreboard

CONTRACTS ...



AMOUNT OF CONTRACTS LET

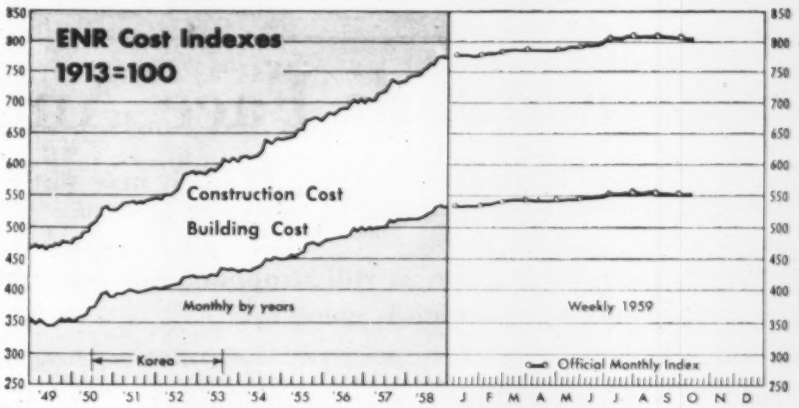
	This Week millions	Cum. 43 wks 1959	Chge '58-'59 %
All Heavy Constr.	$261.0	$17,038.4	+ 4
By Ownership			
PRIVATE	146.5	8,550.8	+29
PUBLIC	114.5	8,487.6	−13
State & Municipal	96.2	6,148.3	−15
Federal	18.3	2,339.3	− 8
By Type of Work			
PUBLIC			
Waterworks	5.9	329.6	+25
Sewerage	8.9	537.6	+ 5
Bridges*	4.4	606.0	0
Highways	37.7	2,463.6	−20
Earthworks, Dams & Waterways	9.0	739.6	−20
Buildings:			
Excl. Housing	28.1	2,161.4	− 3
Housing	1.4	526.4	−46
Unclassified	19.1	1,133.8	− 7
PRIVATE			
Buildings:			
Mass Housing	78.2	3,854.4	+20
Commercial	22.5	1,803.0	+15
Industrial	36.6	2,451.8	+64
Unclassified	9.2	431.2	+21

*Includes private bridges

NOTE: Minimum size projects included are: Waterworks and waterways, $53,000; other public works, $88,000; industrial buildings, $110,000; other buildings, $400,000.

CAPITAL . . .

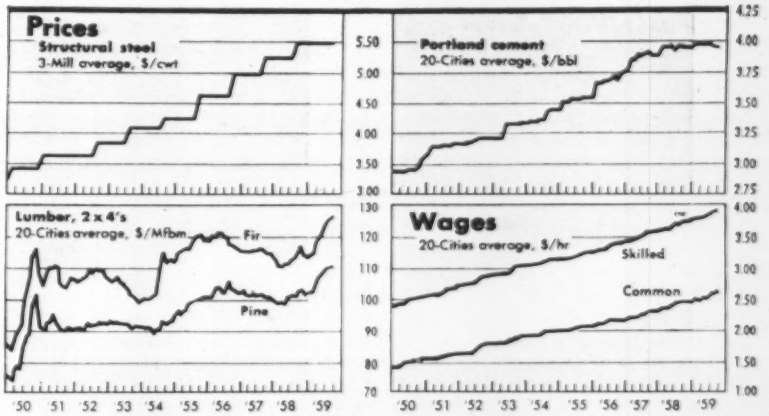
New Capital For Construction	Week of Oct. 15 millions	Cum. 42 wks 1959	Chge '58-'59 %
Corporate Securities	$ 32.9	$3,088.1	−29
State and Municipal:			
All Except Housing	94.7	4,859.5	− 6
Housing	....	75.2	−34
Federal Loans	6.2	118.6	−28
Federal Aid	236.2	3,343.4	+29
Total Nonfederal	$370.0	$11,484.7	− 7
Federal Appropriations:			
Projects in U. S.	....	$3,564.1	−16
Outside U. S.	$ 18.0	22.4	−51
Total New Capital	$388.0	$15,071.2	−10



CURRENT COST INDEXES

ENR INDEXES (1913=100), 20-cities' average	Week of Oct. 15 1959	% Change from Sept. 17 1959	% Change from Oct. 16 1958
Construction Cost	810.50	−0.19	+4.57
Building Cost	554.91	−0.13	+3.46

To convert above indexes to 1926 = 100: Divide Construction Cost by 2.080; Building Cost by 1.850.
1949 = 100: Divide Construction Cost by 4.270; Building Cost by 3.518.



ENR COST INDEXES IN 22 CITIES, 1913 = 100

City	Construction Cost Oct. 1959	Construction Cost Percent Change from last Month	Construction Cost Percent Change from last Year	Building Cost Oct. 1959	Building Cost Percent Change from last Month	Building Cost Percent Change from last Year
Atlanta	624	0	+6.8	499	+0.4	+5.7
Baltimore	745	0	+5.2	553	0	+3.6
Birmingham	652	0	+5.3	515	+0.4	+4.5
Boston	833	−0.4	+4.0	564	−0.4	+4.3
Chicago	922	−0.1	+7.1	586	0	+4.1
Cincinnati	818	0	+4.9	543	+0.6	+4.6
Cleveland	921	−0.4	+4.7	554	−0.7	+3.9
Dallas	604	0	+5.4	490	0	+4.5
Denver	747	+0.7	+1.2	545	+0.9	+2.8
Detroit	961	−0.1	+7.7	597	−0.3	+3.6
Kansas City	803	0	+4.6	558	0	+4.7
Los Angeles	874	−0.4	+5.6	557	−0.5	+4.3
Minneapolis	859	−0.1	+4.2	569	0	+2.9
New Orleans	635	0	+3.4	508	0	+3.3
New York	1012	−0.4	+6.2	646	−0.9	+3.9
Philadelphia	795	0	−1.0	582	0	+0.2
Pittsburgh	858	0	+4.4	609	−0.2	+3.2
St. Louis	877	−0.3	+3.2	576	−0.5	+1.2
San Francisco	853	−0.6	+4.2	553	+0.4	+2.6
Seattle	839	0	+4.7	508	0	+4.5
U. S.—20 Cities' average	811	−0.2	+4.6	555	−0.2	+3.4
Montreal	630	+1.6	+4.5	459	+0.4	+2.2
Toronto	659	−1.1	+6.5	490	−1.4	+5.2

School Bonds Face Another Test

- **If voters remain cool to local plans, it may put more heat on Congress to provide federal aid.**
- **School construction is still dropping, while the school-age population is going up.**

Next month's elections may hold a key to the future of U. S. school construction. Voter reaction to proposed school construction bonds will help determine:

- Whether Congress will be under increased pressure to legislate federal aid for school construction when it reconvenes in January.
- Whether the gap between classrooms needed and classrooms built continues to widen.

Figures of the U. S. Office of Education show that contract awards by states and localities for public school construction fell to $1.09 billion in the first half of this year—11% less than awards in the first half of 1958.

Dollar value of school construction put in place also shows signs of a decline. Total value of public and private construction of elementary, secondary and college classroom buildings slipped to $2.2 billion for the first eight months of 1959—4% below the same period last year.

The decrease in school construction comes in the face of a mounting need for classrooms. The Office of Education estimates the nation will need over 418,000 new classrooms by the spring of 1964. Classroom shortage was estimated at 135,000 when schools opened in September (ENR June 25, p. 21).

A further drop in school construction contracts is anticipated by Health-Education-Welfare Secretary Arthur S. Flemming and his Commissioner of Education, Dr. Ralph Flynt. Bond sales of local school districts dropped 20% in the year ended August 31, according to Mr. Flemming. And the drop may become steeper.

In the first five months of this year voters approved 80% of the school bond proposals placed before them. But in August, they approved only 64% of the school bond proposals—far below the 90% average rate of approval won by other public works bond proposals.

It's still too early to tell whether voters will continue to resist school bond proposals. But October and November election results will tell the story. This month and next, about $1.01 billion in municipal bond proposals will be voted on—83% of the total for schools.

Biggest and most controversial proposal for school construction is in New York State. Voters there will act on an amendment to the state constitution that would allow New York City to go outside its debt limit to sell $500 million worth of school construction bonds. Issues would be held to $50 million a year for 10 years.

The city would also be required to match each dollar of the bond issue with a dollar financed within its debt limit, thus yielding a maximum $1 billion for new schools.

Mayor Robert F. Wagner, Jr., contends that, unless the additional borrowing power is granted, the city can devote only $42 million a year to new schools or cut back on other capital improvements. The Board of Education estimates the need for school construction funds at $100 million per year for the next 10 years. The mayor's stand is supported by most city agencies and many citizen's groups.

Disagreeing are New York City real estate groups, whose property taxes would be raised, and City Controller Lawrence Gerosa. Mr. Gerosa insists that the city can build all the schools required without the extra $500 million and without cutting back on other capital improvements.

Assuming the bonds are issued at their maximum rate, $50 million per year for 10 years, the last issue would be retired in 25 years. On that basis the mayor estimates the $500 million would cost New York City property owners an average $9 a year per $10,000 of assessed valuation—or about $240 per $10,000 of assessed property valuation over the life of the bonds.

The way voters in New York and elsewhere react to proposed school bond issues can be significant. A high rejection rate by voters could lead to increased pressure for federal and state aid.

To HEW Secretary Flemming, the drop in school construction is another argument for Administration's proposal that the federal and state governments guarantee both the principal and interest of local bond issues.

Such guarantees would lower the interest rate on local bonds. Congressional Democrats, however, prefer direct federal grants and loans to needy school districts.

So far, Congress has consistently refused to grant federal school aid. But a combination of growing school needs, declining school construction, tight money resulting in higher interest rates and voter refusal to vote funds at the community level could change Congress' attitude in January.

Urban Renewal: Less Red Tape

The Urban Renewal Administration plans to eliminate a lot of the red tape that has frequently delayed redevelopment projects. That's what URA Commissioner David M. Walker told redevelopment officials from New England and New York State last week at an urban renewal conference in New York City.

Mr. Walker did not say what the agency was going to do about reducing red tape, but ENR learned that the agency's manual governing procedure is now being rewritten.

According to some officials, the redevelopment regulations are too detailed to begin with. And interpretation of urban renewal regional offices sometimes adds complications. Redevelopment plans were frequently sent back for revision because of "different philosophical ideas."

For example, if a community submitted a plan calling for a street 80 ft wide through a project when the city's standard was 60 ft, a federal representative would say the project standard was too high in relation to those in force for the rest of the community.

The URA is going to try to avoid delays stemming from such rulings.

The good news about the red tape was offset, however, by awareness that current high interest rates can effectively slow, and even halt, urban redevelopment.

GM-Euclid Merger Under Fire

In antitrust suit, government claims GM could build Euclid into the dominant equipment firm

The Justice Department has filed suit to force General Motors Corp. to sell off its Euclid Division, which manufactures heavy earthmoving equipment.

A civil antitrust suit, filed in Federal District Court in New York, charges GM violated the Clayton Act's anti-merger provisions when it acquired Euclid Road Machinery Co. in 1953.

The government claims the entrance of a giant like GM into a new field of business through the merger route "may substantially lessen competition, or tend to create a monopoly."

Gist of the government's charge is not that GM acquired an existing monopoly in Euclid; the contention is that the acquisition of Euclid's know-how and accepted products can be built, through GM's vast financial resources, into a dominating interest in the equipment field.

The government's theory is that—just as GM acquisitions of well-established companies led to predominance in autos, trucks, buses and diesel locomotives—the Euclid acquisition may lead to domination of the construction equipment field.

Last year the government won a smashing victory in blocking a proposed merger of Bethlehem and Youngstown companies and set significant guide posts in applying the anti-merger law to asset acquisitions.

It is this law that the antitrusters are using against General Motors.

The suit makes these specific charges against the GM-Euclid merger:

- It may substantially lessen competition or tend to create a monopoly in the $1-billion-a-year off-highway earthmoving equipment industry.
- Potential competition between GM and Euclid has been eliminated.
- Competition in the manufacture of components—particularly diesel engines and transmissions—used in the manufacture of such equipment may be substantially lessened.
- The acquisition gives GM a competitive advantage over smaller producers.
- It may foster other mergers in the industry, thus further reducing competition in the off-highway earthmoving equipment field generally, as well as in particular products.

GM's first reaction to the case was surprise. GM President Frederick Donner said Euclid Division "is not a large factor in the earthmoving equipment field and has accounted for about 5% of the business in this field."

That statement emphasizes one of the principal arguments the case raises. The off-highway earthmoving equipment field includes a broad range of specialized products. Euclid has not been dominant in these products before or since the merger. In the total market for all the products, Euclid was and is rather small.

Although Euclid made more than half of all off-highway dump trucks before the merger, with all its other products—four and six-wheeled scrapers, dumpers, wheel tractors and coal haulers—it only accounted for between 5% and 6% of total industry sales. It did not make several important products, including crawler tractors, graders, bulldozers, tractor-mounted shovels and loaders.

As part of its evidence of the trend since the GM-Euclid merger, the government points out that Euclid's total sales in 1952 were over $33 million and have risen since the merger. The GM Euclid Division had sales of $100 million in 1956 and $90 million in 1957.

As another important effect of the merger, the government cites diesel engine sales. While Euclid bought 383 diesel engines from GM and almost 1,300 diesel engines from other suppliers in 1953, the government charges that since the merger Euclid Division has "materially reduced" its purchases of engines and parts from suppliers other than GM.

In addition, the Euclid line has been enlarged (a principal reason why Euclid wanted to merge) to include such equipment as crawler tractors and log haulers. Some of its equipment is made exclusively with GM diesel engines.

Thus, as the government sees it, the merger means a much bigger Euclid for smaller competitors to deal with and the loss of Euclid as a customer for diesel engine competitors of GM.

Another side of the case is that while the anti-merger law has been successfully used to block proposed mergers—as in the Bethlehem-Youngstown case—no court has yet ordered a split-up under its provisions. This is obviously what the government wants to accomplish in the GM-Euclid case.

Alaska Construction

Federal work predominates, but private work is rising

Federal awards dominate Alaska's heavy construction this year and will probably continue to do so for some time. Nearly $80 million in construction contracts went to contractors in the first nine months of 1959. Of this total, 75% is federal work, mostly on defense installations.

But private industry projects, though still small in dollar volume, are increasing rapidly. The $12 million reported this year is three times larger than a year ago. Mass housing is getting primary attention.

Potential construction is growing fast. ENR's Backlog of Construction in various stages of planning as of September tops $305 million—up 18% in a year. Over a third of this is private work, with housing commanding the biggest share and fastest growth.

Discovery of oil two years ago is attracting more than two dozen oil companies. These are expected to invest more than $100 million within the next few years. This month Standard Oil of California announced plans for a $4-million pipeline and tanker terminal on Kenai Peninsula. It will spend $3 million in 1960 for further exploration.

Roads are another pressing need. For fiscal 1960, the state may obligate $36 million of federal funds for federal-aid highways.

In the first nine months of 1959, private contract awards were 174% above the same period of last year. Public awards this year were 6% below last year's first nine months.

In the ENR backlog, private work as of September was $118.8 million—31% above the same period last year. Public works in the backlog hit $186.7 million—up 10% over the same period of 1958.

Construction Put in Place Drops 4% in September

Dollar value of construction put in place during September was $5.1 billion, a drop of 4% from August's value of $5.2 billion. It was the first drop in eight months, according to the U.S. Department of Commerce.

Normally, there is little or no change in September, officials say. The figures reflect the effect of steel shortages, because the department made a special survey of a sample of builders and contractors to check the impact of the steel strike.

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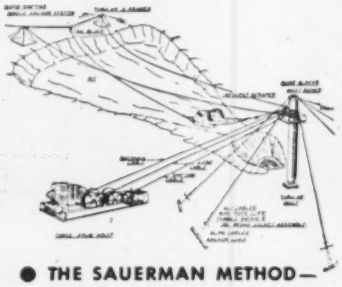

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Officials End Fight On Kentucky Road Funds

A compromise has ended the 90-day-old dispute over Kentucky highway funds. The dispute had threatened to halt the state's roadbuilding program and delay payments due to contractors (ENR Sept. 17, p. 308).

State Attorney-General Jo M. Ferguson had charged that money from a $100-million bond issue, approved by voters in 1956 to match federal-aid funds, was being misused by the State Highway Department. He claimed the money was being mixed with other road funds to meet highway department expenses. On Mr. Ferguson's advice, State Treasurer Henry H. Carter refused to transfer any more of the bond fund to the highway department.

The conflict was settled by an agreed judgment before a Kentucky Circuit Court. Under the judgment:

- The State Treasurer is required to set up a cash account, separate from the state road fund, from which contractors will be paid for federal-aid work.
- Money from the federal-aid matching bonds may be used to advance the federal share of the project, as well as pay the state's share.
- The advances cannot exceed the amount owed to the state by the federal government for reimbursement on federal-aid work.
- If a greater advance is sought than is owed to the state by the federal government, the State Treasurer shall transfer the extra money from the state road fund not from bond funds.
- The State Highway Department, in claiming money from the special bond-money account, must certify such money is for federal-aid projects.

Chief effect of the dispute was to delay payments to contractors and highway employees.

Limits on Japanese Nails Enjoined by U.S. Court

Five American importers and five Japanese exporters of wire nails have been found guilty of violating the Sherman Anti-Trust Act and the Wilson Tariff Act by the U. S. District Court in San Francisco.

They were charged with conspiring to restrain trade in the importation, sale and distribution of Japanese wire nails on the West Coast. The government claimed the defendants limited sales to the American importers, fixed prices for nails on the West Coast and allocated orders among the Japanese firms.

The court enjoined the 10 firms from continuing such practices and prohibited them from discriminating against any American importer.

Court to Rule on Overtime Pay

But Supreme Court declines review of key boycott cases; it will study political use of union dues

The U.S. Supreme Court, opening its fall term last week with a number of significant labor cases on its docket, agreed to review the circumstances under which employers in the construction industry become liable for overtime pay under the Fair Labor Standards Act.

The court declined to review two other construction cases that are of vital interest to the industry under the new labor law. In doing so the court refused to shed any further light on construction industry picketing or on the legality or enforceability of labor contract clauses that limit the rights of general contractors in dealing with subcontractors.

The court did agree to get into the provocative question of union use of dues money for political purposes. And it decided to leave for future consideration a teamster union challenge of the validity of the monitor system imposed by Federal District Judge F. Dickinson Letts.

The wage-hour case, on which the court will rule within the next few months, arose during construction of a $6-million dam in the Nueces River to serve the city of Corpus Christi, Tex.

The government, with the backing of a lower court, tried to impose federal overtime pay requirements on the contractor, H. B. Zachry Co. But the appeals court reversed the ruling on the grounds that the work was not closely connected with the production of goods for commerce, even though industrial plants engaged in interstate commerce might use water provided by the dam.

Not all activities that in some way lead ultimately to the production of goods for commerce come within the law, the court said.

The Supreme Court's forthcoming wage-hour decision may redefine the broad and troublesome limits of an earlier ruling in the Vollmer case. That decision has lengthened the arm of the Labor Department to reach all construction activities so "directly and vitally related to the functioning of an instrumentality or facility of interstate commerce as to be, in practical effect, a part of it, rather than isolated, local activity."

Although the court's promise to review the Zachry ruling may bring some relief to contractors, the court's refusal to review the two boycott cases does little to promote current understanding of the new labor law.

One of the cases involved the plight of an engineering subcontractor—St. Maurice, Helmkamp & Musser—which found itself the victim of a master labor contract clause requiring employees of subcontractors to be members of the same union (operating engineers) the general contractors used.

The National Labor Relations Board, in a split decision, held that the restrictive clause was not illegal but that the union could not strike to enforce it. The decision was affirmed by the Court of Appeals of the District of Columbia—and continues to stand as the law. This means, in one sense, that the construction industry's hot-cargo exemption in the new labor law added nothing to the existing law.

The other construction case the court will not review involved the problems of a nonunion general contractor—Cisco Construction Co.—on some military construction projects in the State of Washington.

Several unions engaged in a combination of legal and illegal action, including use of roving pickets and pickets at two sites, in protest against the working conditions of Cisco employees. Two lower courts decided that the "totality" of the union efforts was illegal pressure on union subcontractors to quit doing business with Cisco, and awarded Cisco $75,000 in damages. Result is further confusion over the difference between primary and secondary disputes.

The appellate ruling, which now stands, drew heavily on the Denver Building Trades case and promises to give the unions more ammunition when they go before Congress next year to get the Denver case reversed and construction boycotts legalized.

All of these decisions have a direct impact on the continuing legislative struggle between labor and management. And the outcome of that struggle may be influenced to some extent by the Supreme Court's pending decision on union use of dues money to support political candidates and doctrines.

The case, which arose in Georgia, raises this question: Is a worker's right to freedom of speech violated when, under a union shop agreement, he has to join a union that uses dues money for political action the worker does not approve of?

A Georgia court said a violation does occur. If the Supreme Court affirms the decision, some unions will have to revise their political activities or their union shop clauses.

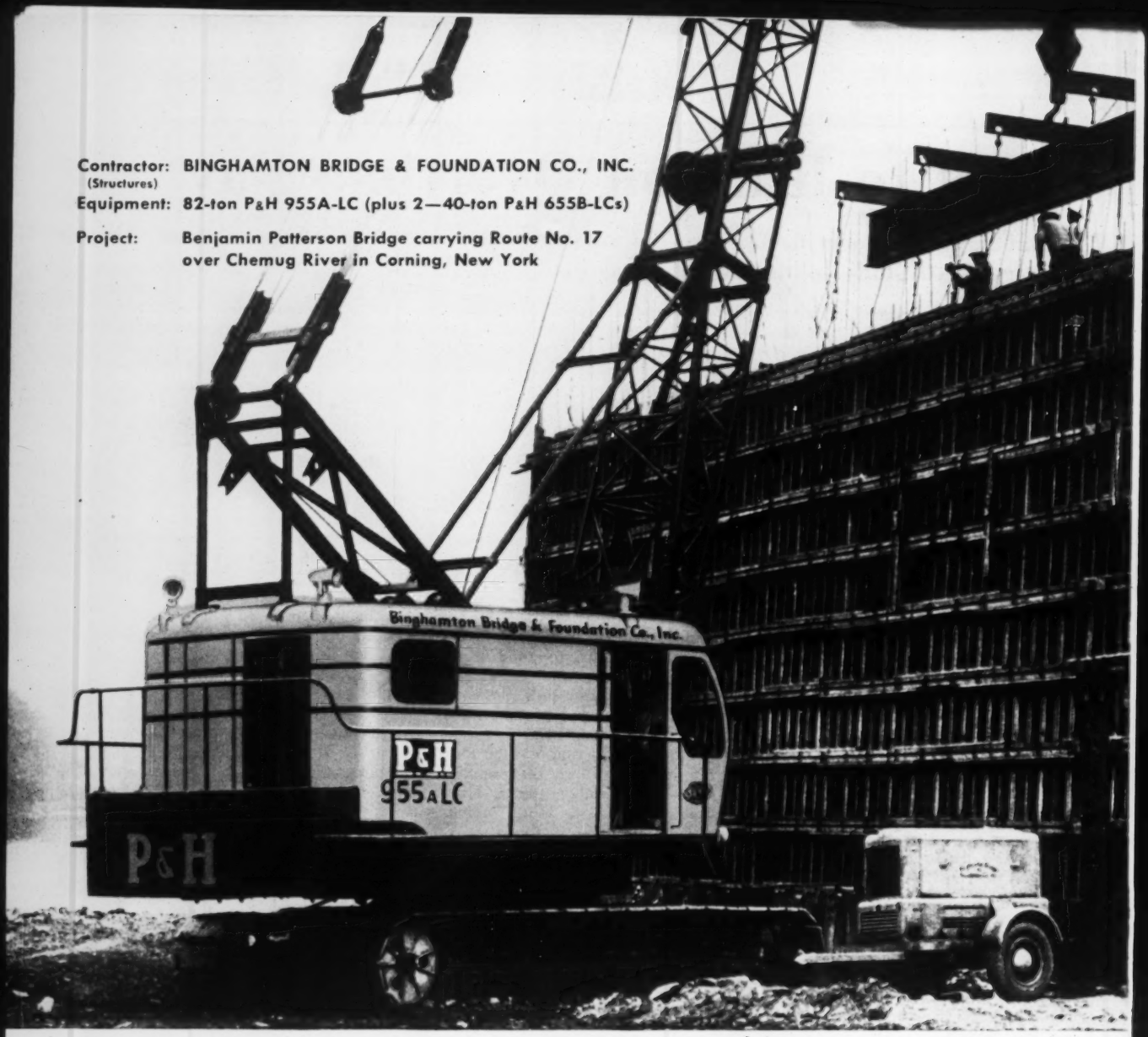
Labor in Brief . . .

• Higher labor costs?—J. F. Kostyo, secretary of the Ohio Apprenticeship Council, suggests that the construction industry is asking for higher labor costs through its failure to train even enough apprentices to fill the vacancies caused by retiring journeymen. "The law of supply and demand works here as well as anywhere else," he warns.

• Seeks consumer support—One of the top AFL-CIO labor leaders in California has called upon organized labor to woo the "consumer sphere of influence" away from the "anti-labor" forces of big business. He says business is exploiting consumers to win support for administered prices and the undermining of union strength and collective bargaining.

• Challenge from unions—A representative of Standard Oil of California has warned that professional societies face a serious challenge in the growing effort of organized labor to "reach future scientists on the campus before professional societies can get to them." He says there is "virtually no unified effort to counteract the political challenge of unionism."

• Familiar with the law?—A simplified explanation of the major provisions of the Labor-Management Reform Law has been prepared by the Bureau of National Affairs, Inc., 1231 24th St., N. W., Washington 7, D. C. The 16-page booklet, priced for employee distribution, may be obtained from BNA.



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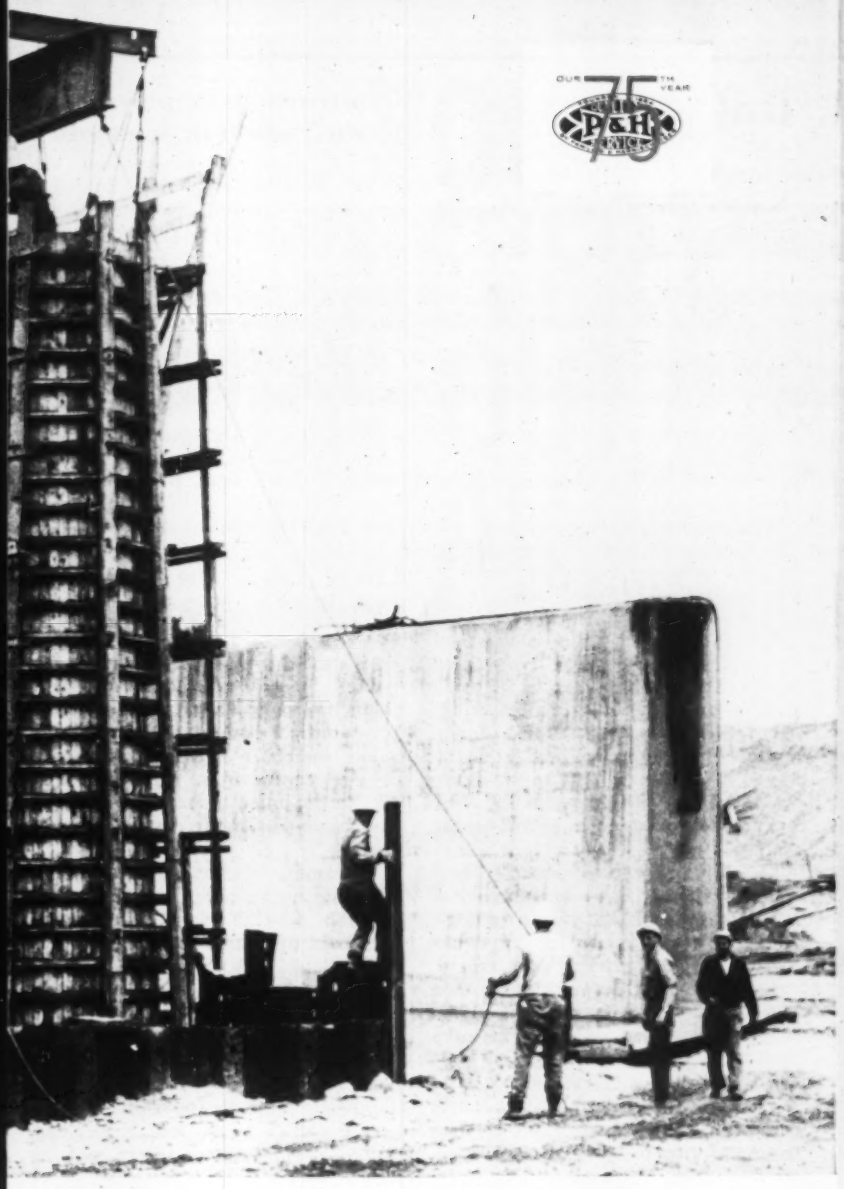

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CENTRAL TEXAS EQUIPMENT CO. — Austin, Texas
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CARRINGTON COMPANY — Seattle 4, Washington
RISH EQUIPMENT COMPANY — Fifteen Branches in Ohio and the Virginias
DROTT TRACTOR COMPANY, INC. — Milwaukee 8, Wisconsin
WILSON EQUIPMENT & SUPPLY CO. — Cheyenne, Wyoming
HONOLULU IRON WORKS CO. — Honolulu, T.H.

Labor Hits Work Rules Changes

Meany says "industrial democracy" is labor's big stake in the steel dispute; Kaiser gives some support

The 1959 steel dispute may become known as labor's bid for "industrial democracy."

That was how AFL-CIO President George Meany described the basic issue in the deadlock last week. His analysis was indirectly supported in several respects by the tenor of the unofficial and now abandoned behind-the-scenes negotiations between the steelworkers union and Kaiser Steel Corp.

Mr. Meany told the Presidential fact-finding board that investigated the dispute the strike is "no ordinary economic test of strength." He said it is a "concerted attempt" by steel management to weaken and destroy the union. Real purpose of the strike, he asserted, lies in management's demand for work rule changes that would put an end to industrial democracy.

To Mr. Meany, industrial democracy means this: "A free American worker, united in a free democratic union, must have an equal voice in determining his own economic destiny."

Negotiators for the steel industry have conditioned their settlement offers on union acceptance or arbitration of work rule changes affecting such things as crew sizes, work assignments, idle time, incentive standards, slowdowns and wildcat strikes.

These changes, according to the negotiators, would allow management "to eliminate waste and improve efficiency."

"We are talking about contract provisions," they say, "which are often interpreted to mean that once an operation has been performed in a certain way, it can never be performed in a more efficient manner without union consent."

From labor's point of view, this approach impinges on the principle of "past practice" in settling labor disputes and raises the question of worker protection against arbitrary treatment. Under the management proposal, of outright acceptance, any action taken under the work rule changes it seeks would be subject later to grievance procedure.

Labor feels the time to protect its rights is before they are taken away.

The arbitration proposal was rejected by the union because it thought the proceeding would be too narrow for a full-scale exploration of the issue.

Kaiser's tentative proposal, as reported by Arthur Goldberg, attorney for the steelworkers union, would have met some of the union's objections.

Under the proposal, a joint committee would have been set up to study problems stemming from automation, technology and work rules. The goal: solution of the problems by mutual agreement.

Kaiser, in contrast to the steel negotiators, also suggested a committee to work on the long-range problem of profit sharing by workers.

The proposals of Kaiser, which still faces aluminum contract negotiations, were presented to help break the deadlock in steel. They were scotched by U. S. Steel to preclude whipsawing.

Mr. Meany said the concept of "management prerogative" presented by the steel negotiators "is in its truest sense a revival of the master-servant doctrine which we in the trade union movement had felt was dead in America. We do not intend to return to the day when the worker was the mere servant bowing to the whim of the master."

Other union leaders view the management attitude as a continuation of the open shop plan of the early 1900s and of its successor, the American Plan, introduced after World War I.

It was Mr. Meany's contention, based on productivity increases in the steel industry, that present work rules have not prevented technological progress, which, he said, is not opposed by the union. He charged that the steel companies are not seeking the changes to insure progress but "to insure weakened unionism."

Calling industrial democracy "one of the greatest gains won by the trade union movement," Mr. Meany warned labor "does not intend to abandon it."

The independent International Longshoremen's Association is facing somewhat the same problem in the dock dispute, to which the emergency provisions of the Taft-Hartley Act have also been applied.

Shippers say the union prevents them from seeking cheaper ways to handle cargo. The union concedes management's right to use labor-saving equipment but insists that the union has the obligation to prevent "barbarism" by management and to protect workers thrown out of work. It says the question is this: "Shall the workers through their unions have a say in the introduction of progress?"

Construction Employment Down 75,000 in September

Employment in construction declined somewhat more than the usual amount last month, according to the Labor Department's Bureau of Labor Statistics.

It fell by 75,000 to 3,024,000. The bureau said there was little indication that shortages of steel were connected with the decline.

Comparable figures for the three preceding years are: 1956, 3,340,000; 1957, 3,285,000; 1958, 2,927,000.

While construction employment remained considerably below its September 1956 level, total civilian employment was 600,000 higher than its previous September record in 1956.

Court Eases the Impact Of Right-to-Work Law

A loophole in right-to-work laws has been opened by a state court in Kansas.

The Wyandotte County District Court has found nothing wrong with a labor contract clause that compels nonunion workers in a bargaining unit to pay the equivalent of monthly union dues to the union that represents them. The clause is known as an "agency clause."

The ruling is favorable to organized labor and unfavorable to those employers who want to blanket the nation with right-to-work laws.

The case arose under the Kansas constitutional right-to-work amendment approved by the voters last year.

The Kansas provision provides:

"No person shall be denied . . . employment because of membership or nonmembership in any labor organization, nor shall . . . any individual corporation . . . enter into any agreement . . . which excludes any person from employment . . . because of membership or nonmembership in any labor organization."

Judge H. G. Miller, Jr. said the amendment is "plain and unambiguous" and merely outlaws those clauses that condition employment on union or nonunion membership.

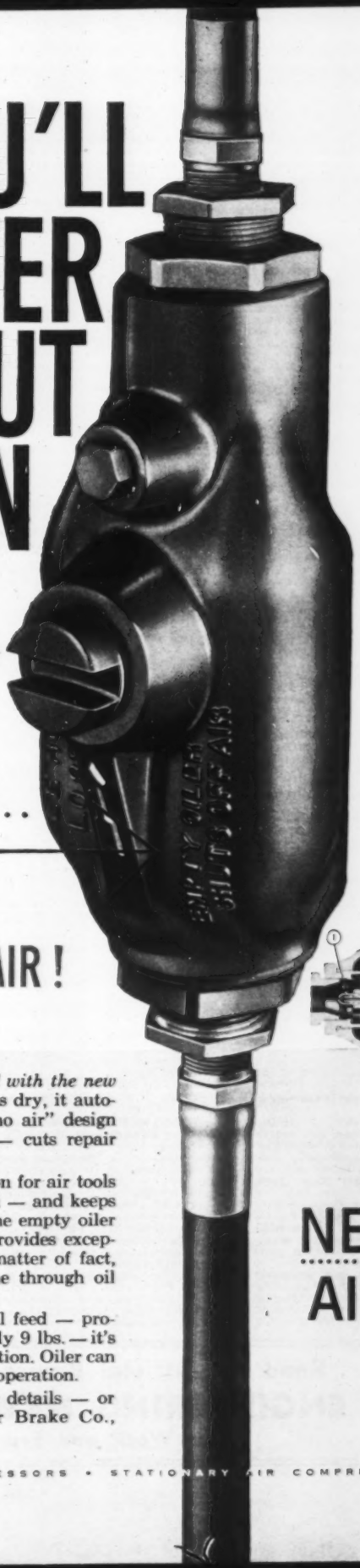
Western Boilermakers Win Big Increase

Boilermakers employed on construction work in eight western states and Alaska will receive basic wage increases totaling 70 cents an hour.

The three-year agreement calls for a 25-cent hourly wage increase retroactive to October 1, an additional 25 cents next October 1 and a 20-cent increase on October 1, 1961.

YOU'LL NEVER BURN OUT AN AIR TOOL

with the new Le Roi LO-380 line oiler...



Here's how the LO-380 Saves Tools— Cuts Repairs!

(1) Inlet reed valve meters air into the oil-resistant bellows

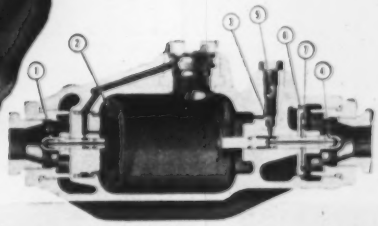
(2) which creates pressure that forces regulated amount of oil through porting connected to the needle valve (3) and the porting connecting it to the outlet reed valve

(4) through which oil is injected into the air stream.

(5) Set screw permits easy external adjustment of oil feed during operation.

(6) Positive pressure differential valve assures correct oil feed for all air flows — eliminates oil waste.

(7) Shut-off valve automatically stops air when oiler is empty. As oil supply goes down, bellows (2) expand and contact the shut-off plunger, depressing it until the valve reaches the automatic shut-off position.



EMPTY OILER SHUTS OFF AIR!

That's right! *You'll never burn out an air tool with the new Le Roi LO-380 on the job!* When the oiler runs dry, it automatically shuts off the air! The "no oil — no air" design prevents unnecessary wear on critical parts — cuts repair bills — extends tool life!

The new line oiler assures positive lubrication for air tools — delivers a steady mist of oil at 10 to 150 psi — and keeps it flowing until you shut the air off, or until the empty oiler shuts it off automatically. Metered oil flow provides exceptional economy, prevents oil splurges. As a matter of fact, the LO-380 will pay for itself in a short time through oil savings alone!

Oiler permits easy external adjustment of oil feed — provides full one-pint capacity. Lightweight — only 9 lbs. — it's easy to use, easy to move—operates in any position. Oiler can be refilled under pressure while air tool is in operation.

Contact your nearest Le Roi distributor for details — or write to Le Roi Division, Westinghouse Air Brake Co., Milwaukee 1, Wisconsin.

LE ROI NEWMATIC® AIR TOOLS

PORTABLE AND TRACTAIR® AIR COMPRESSORS • STATIONARY AIR COMPRESSORS • AIR TOOLS

AT-906

OFFICIAL PROPOSALS

RATE: The rate for Official Proposal advertising is $2.40 per line or fraction set solid. Where the advertisement is set other than solid, the space is measured by total space occupied and charged on basis of 12 lines to the inch.

CLOSING DATE: Friday 10:30 A.M. for issue dated the following Thursday.

SEND COPY TO: Official Proposal Division, Engineering News-Record Class. Adv. Div., P. O. Box 12, N. Y. 36, N. Y.

Bids: October 29, 1959

New York State Canal & Highway Work

NOTICE TO CONTRACTORS: STATE DEPARTMENT OF PUBLIC WORKS, ALBANY, N. Y.—Pursuant to the provisions of the Highway Law and Canal Law and special provisions for projects financed with Federal Air Funds, sealed proposals will be received until ten-thirty o'clock A. M., eastern standard time, on the 29th day of October, 1959, by Henry A. Cohen, Director, Bureau of Contracts, 12th Floor, The Governor Alfred E. Smith State Office Building, Albany, N. Y., for the following projects:

County	Contract No.	Name	Miles	Type	Deposit	Estimated Cost of Work
DISTRICT No. 1, G. L. Nickerson, District Engineer, 353 Broadway, Albany 1, New York						
Schenectady (Rte. 5)	R.C. 59-148	Great Western Gateway Br., S.H. 9213	0.74	Asph. Conc. Pavt. & Bridge Repair	$11,000 Plans $5	$200,000
DISTRICT No. 2, Lacy Ketchum, District Engineer, 109 Genesee Street, Utica 1, New York						
Madison & Oneida (Rte. 365A)	FAC 59-10 FASH 59-15 FARC 59-104	Proj. US-496(1) City of Oneida: East-West Arterial Highway; Prospect St.: Oneida East; Chittenango-Oneida Pt. 2, S.H. 726 & Chittenango-Oneida Pt. 3, S.H. 1821	2.70	Asph. Conc. Pavt. = 2.70 Mi 2 Sp. WF Beam Bridge 105	$72,000 Plans $5	1,310,000
Montgomery (Rte. 5)	FAC 59-11 FASH 59-17 FARC 59-108	Proj. U-F-349(12) City of Amsterdam: East-West Arterial Highway; Amsterdam East: Rte. 5 Connection; Mohawk River Turnpike, Amsterdam-Cranesville, S.H. 180 & Hoffman-Cranesville, S.H. 5126	5.28	Demolition of Bldgs.	$5,000 Plans $5	95,000
DISTRICT No. 3, E. E. Towlson, Acting District Engineer, 333 E. Washington St., Syracuse, New York						
Cayuga (Rte. 90)	FARC 59-61	Proj. F-598(4) Aurora-Union Springs Pt. 2, S.H. 1690	4.59	Asphalt Concrete Pavt. Type 1A	$48,000 Plans $5	861,000
Onondaga & Oswego (Int. Tour. Rte. 81)	FITS 59-18	Proj. I-81-2(37)84 Int. Rte. 505, Syracuse (Willow St.) to Parish FIC 56-11, FAC 54-3, FASH 54-3, FISH 57-6, FISH 57-8, FISH-3, FISH 58-9 & FISH 58-26	26.40	Traffic Signs & Delineators	$9,000 Plans $5	166,000
Oswego	U.S. 101	Lock 0-7, Oswego Canal, City of Oswego	....	New Gates, Lowering Upper Sills & Misc. Work	$5% of Bid Plans $10	(Confidential)
DISTRICT No. 4, B. F. Perry, District Engineer, Barge Canal Terminal, Rochester 1, New York						
Monroe (Int. Tour. Rte. 490)	FIC 59-16	Proj. I-490-2(12) Interstate Rte. Connection 580 (Rochester City: Eastern Expressway Pt. 1)	0.76	Demolition of Bldgs.	$4,500 Plans $5	84,000
Monroe	FAC 59-17	Proj. U-1089(12), U-231(17) Rochester City: Inner Loop (North St. to George St.)	0.14	Demolition of Bldgs.	$3,000 Plans $5	56,000
DISTRICT No. 5, E. G. H. Youngmann, District Engineer, State Office Bldg., 65 Court St., Buffalo 2, New York						
Chautauqua	FASS 59-24	Proj. S-554(1) French Creek-Marks, Co. Rd. 322	0.32	Bit. Double Surf. Treat Pavt. 2 Sp. Comp. I-Beam Bridge 147'	$8,000 Plans $5	155,000
Niagara	M 59-11	Bridge E-222 Erie Canal, Gasport	....	Reconstruction of 2-Story Frame Control House	$1,000 Plans $10	18,000
DISTRICT No. 9, J. C. Frederick, District Engineer, 71 Frederick St., Binghamton, New York						
Broome (Rte. 26)	RC 59-149	Union-Maine, S.H. 275; Maine, S.H. 374 & Maine-Glen Aubrey, S.H. 1449	....	Removal of 43 Trees	$220 Plans $5	4,000
DISTRICT No. 10, M. E. Goul, District Engineer, 325 W. Main St., Babylon, L. I., N. Y.						
Nassau (Rtes. 25 & 107)	FARC 59-133	Proj. US-377(2); US-500(2); U-1000(6) Massapequa-Glen Cove, S.H. 9017; Jericho-Oyster Bay, S.H. 9021; Jericho Turnpike, S.H. 9020 & Jericho Turnpike-Plainview Rd., S.H. 436	3.04 (0.88 Acc.)	9" Cem. Conc. Pavt. 2 @ 37' Var. Wide = 2.28 Mi. Misc. Work = 0.76 Mi. (9" Cem. Conc. Pavt. with Carbon Black = 0.88 Mi. Acc.) 4 Sp. Comp. WF I-Beam Hy. Sep. 206'	$165,000 Plans $5	2,995,000
Nassau (Rte. 107)	FARC 59-151	Proj. US-377(3) Massapequa-Glen Cove, S.H. 9017	0.66	Drainage Work = 0.55 Mi. Misc. Work = 0.11 Mi.	$15,000 Plans $5	261,000
Nassau & Suffolk	FALIE 59-2	Proj. U-862(23) Long Island Expressway (South Oyster Bay Rd. to Nassau-Suffolk County Line) Cont. No. 6	3.27 (4.04 Acc.)	9" Cem. Conc. Pavt. with Carbon Black 2@ 36' Var. Wide = 3.17 Mi.; Misc. Work = 0.10 Mi. (Acc Ramps = 1.86 Mi. Cem. Conc. Pavt. & Service Rds. = 2.18 Mi. Asph. Conc. Pavt.); 4 Hy. Seps. R.C. Rig. Frames 49.2', 155.2', 139.6', 79.9'; 2 Hy. Seps. Comp. Weld. Steel Plate Girders 113.2', 113.5'; 2 Hy. Seps. Comp. Steel Stringers 89.9', 149.6'	$480,000 Plans $10	8,745,000
		Total 14 Contracts (12 Hys. & 2 Canal)	52.82			$14,950,000

Any projects in this letting that are on the Federal Air highway systems are subject to the provisions of the "Federal-Aid Highway Act of 1956", being Public Law 627, 84th Congress, approved June 29, 1956, and are also subject to the applicable New York State statutes.

In compliance with the provisions of Section 115 (Prevailing Rate of Wage), Public Law 627, the minimum wages to be paid laborers and mechanics are included in wage schedules that are set out in the bid proposal.

Maps, plans, specifications and proposal forms may be seen and obtained at the office of the State Department of Public Works, Bureau of Contracts, Albany, N. Y., and at the office of the District Engineers noted above, and may also be seen at the office of the State Department of Public Works, 270 Broadway, New York City.

The deposit for Plans and Proposal Forms for each contract is indicated above. A refund will be made in full to bidders for return of one set, in good condition, within 30 days of award, or rejection of bids; refund for all other sets in good condition, similar period, will be 50% of deposit.

Special attention of bidders is called to "Information for Bidders" in the Public Works Specifications, and to the special provisions applying to projects financed with federal funds. Award of a contract is subject to priorities and allocations under the Defense Production Act of 1950, as Amended, and all regulations issued thereunder.

Proposal for each contract must be submitted in a separate sealed envelope with the name and number of the contract plainly endorsed on the outside of the envelope. Each proposal must be accompanied by draft or certified check payable to the order of the "State of New York, Commissioner of Taxation and Finance" for the sum as specified in the advertisement and the proposal. The retention and disposal of the bidding check, the execution of the contract and bond shall conform to the provisions of the Highway Laws, as set forth in "Information for Bidders".

The right is reserved to reject any or all bids.

J. BURCH McMORRAN
SUPT. OF PUBLIC WORKS

Read the Official Proposal Columns of
ENGINEERING NEWS-RECORD
This Week and Every Week

OFFICIAL PROPOSALS

Bids: December 8, 1959

Construction of Sewers and Relay of Water Mains

PHILADELPHIA, PENNA.
PROCUREMENT DEPARTMENT
WATER DEPARTMENT

Sealed bids will be received in Room 313, City Hall Annex, until 2:30 P.M. (E.S.T.) on Tuesday, December 8, 1959, and opened at that time, for Bid No. 2408—Work No. S-2656-RED.

Construction and Reconstruction of Sewers and Relay of Water Mains in Oregon Avenue from Bulkhead Line at Delaware River to Front Street; Front Street from Oregon Avenue to Porter Street; Porter Street from Front Street to Tenth Street.

PRINCIPAL ITEMS OF WORK

826 lin. ft. of Twin 6'6" h x 9'6" W reinforced concrete conduit on piles.
135 lin. ft. 6'6" h x 9'6" W reinforced concrete conduit on piles.
3117 lin. ft. 6'6" h x 9'0" W reinforced concrete conduit on piles.
904 lin. ft. 6'0" h x 8'6" W reinforced concrete conduit on piles.
3666 lin. ft. 5'6" h x 9'0" W to 5'0" h 6'0" W reinforced concrete conduit.

Proposal forms, questionnaires and specifications may be obtained from the Water Department, in Room 1132, City Hall Annex, Juniper Street and Filbert Street, Philadelphia 7, Penna. Blueprints of plans may be purchased at bidder's expense, directly from the Keystone Blue Paper Company, 1230 Arch Street, Philadelphia 3, Penna.

No bids will be received unless bidder is qualified by the Procurement Commissioner. The questionnaire form with all questions fully answered must be filed with the Water Commissioner, 113 City Hall Annex, at least one (1) week prior to the date of opening bids.

Each proposal must be accompanied by security in form and amount as set forth in the proposal form.

MICHAEL H. SURA, COMMISSIONER.

District of Columbia—Highway Construction—Dept. of Highways & Traffic, October 1, 1959. CONSTRUCTING THE RIVER CROSSING SUBSTRUCTURE FOR THE THEODORE ROOSEVELT BRIDGE, FEDERAL AID INTERSTATE PROJECT NO. I-66-1(410), Contract No. 1, consisting of approximately 14,713 cu. yds. Class B Concrete, 584,000 lbs. Reinforcing Steel, 705 Concrete filled pipe piles, 6,454 cu. yds. Stone Masonry, and 55,000 lbs. Structural Steel. (The Labor Department has predetermined the wage rates to be used on this Interstate Project.) "On October 22, 1959, 1:00 PM, EDT, Rm. 402, District Bldg., 14th and "E" Sts., N.W., Wash., D. C., pre-bid meeting will be held between Dept. of Highways and Traffic Engineers and bidders to answer questions on this project". Bid forms, plans and specifications are now available from Supervisor, Bid & Contract Division, Procurement Office, D. C., Room 404, 499 Pa. Ave., N.W., upon deposit of a certified check for $30.00 per set, payable to D.C. Treasurer. (Phone NA 8-6000, Ext. 2378). SEALED BIDS to be opened 2:00 PM, EST, October 29, 1959, in Room 424, 499 Pa. Ave., N.W.—INVITATION NO. C-6053-H.

Bids: November 17, 1959

Notice of Letting of Drain Contract

NOTICE OF LETTING OF DRAIN CONTRACT AND REVIEWING OF APPORTIONMENTS FOR THE LOCATING, ESTABLISHING AND CONSTRUCTING OF THE READY STORM WATER DRAIN IN THE TOWNSHIP OF DEARBORN AND VILLAGE OF INKSTER, WAYNE COUNTY, MICHIGAN.

NOTICE IS HEREBY GIVEN, That I, HENRY V. HERRICK, County Drain Commissioner for the County of Wayne, State of Michigan, will now and until 11:00 o'clock in the forenoon on Tuesday, the 17th Day of November, A.D., 1959, in the Office of the Wayne County Drain Commissioner, 3523 Cadillac Tower, Detroit 26, Michigan, proceed to receive sealed bids for the construction of a certain drain known and designated as the READY STORM WATER DRAIN, to be located and constructed in the Township of Dearborn and Village of Inkster, in said County, at which time bids will be publicly opened and read by HENRY V. HERRICK, the Wayne County Drain Commissioner.

Said drain is divided into one section consisting of the following items and quantities:—

MAIN TRUNK

241 lin. feet	90" Equiv. 10 Ga. C.M.P. or C-76-II Lo-Hed Pipe with Concrete Cradle
4,200 lin. feet	90" C-76-II Concrete Sewer with Concrete Cradle
585 lin. feet	84" C-76-I Concrete Sewer with Concrete Cradle
730 lin. feet	72" C-76-I Concrete Sewer with Concrete Cradle
641 lin. feet	66" C-76-I Concrete Sewer with Sand Encasement
55 lin. feet	24" C.M.P.
65 lin. feet	18" C.M.P.
140 lin. feet	15" C.M.P.
251 lin. feet	12" C.M.P.
13 lin. feet	10" C.M.P.
70 lin. feet	6" Class 150 C.I., including all necessary bends and fittings
1	Transition Section, 5 feet in length, more or less, between 90" equiv. (C.M.P. or Lo-Hed Pipe) and 90" C-76-II Concrete Sewer
5	Standard Poured Concrete and Brick Manhole (M.H. 1, 2, 3, 4 and 5)
2	Standard Poured Concrete and Brick Manhole with 36" Stub (M.H. 6 and 8)
1	Special Manhole (M.H. 7)
1	Special Brick Manhole with 42" Stub (M.H. 9)
2	Standard Brick Manhole 4' Dia. (M.H. 26 and 27)
3	Standard Brick Catch Basin 4' Dia.
1	Headwall on 90" Equiv. at River Rouge
1	3' x 3' Inlet at Cherry Hill
247 sq. yds.	Concrete Road Replacement at Avondale
24 lin. feet	Fill Ex. 48" Culvert with Class "C" Concrete at Cherry Hill

ARM No. 1

1,512 lin. feet	66" C-76-I Concrete Sewer with Sand Encasement
803 lin. feet	60" C-76-I Concrete Sewer with Sand Cradle
458 lin. feet	54" C-76-I Concrete Sewer with Sand Cradle
1	Standard Poured Concrete with Brick M.H. (M.H. 10)
1	Standard Poured Concrete with Brick M.H. with 30" Stub (M.H. 11)
1	Standard Poured Concrete with Brick M.H. with 18" and 12" Stub (M.H. 12)
2	Standard Brick M.H. 6' Dia. (M.H. 13 and 14)
1	Standard Brick M.H. 6' Dia. with 48" and 2—24" Stubs (M.H. 15)

ARM No. 2

1,546 lin. feet	60" C-76-I Concrete Sewer with Sand Cradle
1,178 lin. feet	54" C-76-I Concrete Sewer with Sand Cradle
1	Standard Brick M.H. 6' Dia. with 21" Stub (M.H. 16)
2	Stanard Brick M.H. 6' Dia. with 18" Stub (M.H. 17 and 19)
2	Standard Brick M.H. 6' Dia. with 15" Stub (M.H. 18 and 20)
1	Standard Brick M.H. 6' Dia. with 36" and 18" Stub (M.H. 21)
2	Standard Brick M.H. 5' 6" Dia. with 2—15" Stubs, (M.H. 22 and 23)
1	Standard Brick M.H. 5' 6" Dia. with 18" Stub and 15" Stub, (M.H. 24)
1	Standard Brick M.H. 6' Dia. with 42" Stub and 2—30" Stubs, (M.H. 25)

Said job will be let in its entirety, in accordance with the plans now on file with the other papers pertaining to said Drain, in the office of the County Drain Commissioner of the County of Wayne to which reference may be had by all parties interested, and bids will be made and received accordingly.

Contracts will be made with the lowest responsible bidder, who shall give adequate security for the performance of the work. I hereby reserve the right to reject any or all bids, waive any irregularities in bidding, and/or to adjourn such letting to such time and place as I shall publicly announce.

The Drain Commissioner shall have the right to hold all bids for a period of One Hundred and Fifty (150) calendar days after the opening thereof. No bidder shall have the right to withdraw his bid during such time.

The Drain Commissioner, shall, within the period of 150 days herein provided for the holding of bids, obtain the approval of the Wayne County Board of Auditors to the awarding of the contract to the lowest responsible bidder, and shall notify such bidder of his award of the contract. The Drain Commissioner shall within 150 days from the date of receipt of bids attempt to sell bonds in an amount sufficient to pay for this project, it being understood that if the Drain Commissioner shall not have marketed bonds in an amount sufficient to pay for this project within such 150 day period, no contract shall be executed. If within such 150 day period the Drain Commissioner shall successfully sell bonds in an amount to pay for the project, the Drain Commissioner shall forthwith notify the successful bidder of such sale and a contract with the successful bidder shall be executed within ten (10) days from the date of notice of the Sale of Bonds. The bid, of successful bidder, and the bond securing the same, shall remain in full force and effect until the contract is executed. If the bonds hereinbefore required to be sold are not marketed within the period provided above, or notice of such sale is not given by the Drain Commissioner to the successful bidder within the specified time, the bid shall be deemed to be null and void and the bid deposit shall be returned to the successful bidder.

The 150 day period provided above for the sale of bonds and the giving of notice thereof may be extended from time to time by mutual agreement between the successful bidder and the Drain Commissioner.

The successful bidder shall not be required to execute performance bond, material lien bond, or provide the insurance herein otherwise required until he shall first have been notified of the sale of the bonds by the Drain Commissioner, and upon receipt of such notice, the successful bidder shall be required to execute and deposit such bonds and insurance as are required by the terms of the contract at the time of the execution thereof.

Copies of the plans and specifications may be secured from the Office of the Drain Commissioner of the County of Wayne, Michigan, at 3523 Cadillac Tower, Detroit 26, Michigan. A deposit of Twenty-five ($25.00) DOLLARS, CHECK ONLY, will be required on each set of plans, which will be refunded upon their return in good order within 30 calendar days after the opening of bids.

Any person desiring to bid on the above mentioned work will be required to deposit with each bid a certified check payable to the Wayne County Drain Commissioner, cash, or a satisfactory bid bond executed by the bidder and a surety company, in an amount equal to five percent (5%) of the bid.

The payments for the above mentioned work will be made as follows: IN CASH FROM THE RECEIPTS OF THE SALE OF BONDS. Contractor may draw up to 80% of work completed from time to time and upon the approval of the Engineer.

Taxes will be spread in Twenty (20) Installments. First Installment, December, 1960.

Dated this 12th Day of October, A.D., 1959.

HENRY V. HERRICK
County Drain Commissioner
County of Wayne

Bids: October 29, 1959

Notice Re: Prequalification Forms For Contractors

BOARD OF EDUCATION—BUREAU OF CONSTRUCTION

NOTICE IS HEREBY GIVEN THAT

The Superintendent of Design, Construction and Physical Plant, Bureau of Construction, 4th Floor, Room 407, 42-15 Crescent Street, Long Island City 1, New York, will receive applications for prequalification from contractors who may wish to submit bids for the proposed hereinafter specified contracts as follows:

General construction, plumbing and drainage, (including heavy kitchen equipment), heating and ventilating, electrical work and lighting fixtures, new addition and modernization.

Public School 224, Brooklyn, Hemlock Street, Wortman and Autumn Avenues.

General construction, plumbing and drainage (including heavy kitchen equipment), heating and ventilating, electrical work and lighting fixtures, and electric passenger elevator, new addition and modernization.

George Westinghouse Vocational and Technical High School, Brooklyn, Tillary, Bridge and Lawrence Streets.

Prequalification application forms will have to be secured from and must be submitted to the Superintendent of Design, Construction and Physical Plant, Bureau of Construction, 4th Floor, Room 407, 42-15 Crescent Street, Long Island City 1, New York.

Bids when advertised, will be received from prequalified bidders only.

Time for submitting prequalification applications by contractors will expire on Thursday, October 29, 1959.

JOSEPH R. WEISS
Superintendent of Design,
Construction and Physical Plant.

Dated: October 7th, 1959.

Starting: Monday, October 19, 1959. Five (5) Days.

APPROVED AS TO FORM
Acting Corp. Counsel

OFFICIAL PROPOSALS

Bids: November 17, 1959

Contract BP-190.001

THE PORT OF NEW YORK AUTHORITY
BROOKLYN-PORT AUTHORITY PIERS
PIER NO. 6
DEMOLITION, DREDGING, BULKHEAD AND FILL

Sealed proposals for the demolition of existing structures, construction of a bulkhead, dredging and placing fill for Pier No. 6 at the Brooklyn-Port Authority Piers will be received at the office of the Chief Engineer of The Port of New York Authority, Room 1100, 111 Eighth Avenue, New York 11, N. Y., until 2:30 P.M. on Tuesday, November 17, 1959, at which time said proposals will be opened and read in Room 1108.

Contract documents may be seen at the Office of the Assistant Chief Engineer for Design of the Authority, Room 1115. Documents will be furnished upon deposit of $30.00 per set for not more than three sets to any one company (each set including one copy of the contract drawings). Additional sets will be furnished upon payment of $30.00 per set, which payment is not returnable. Deposits and payments shall be delivered to the Treasury Department, Room 1001, where a receipt will be issued. The receipt shall be delivered to Room 1115, where the documents will be furnished.

Those who have submitted a bid on the contract directly to the Authority will receive a refund of the deposit for each set of documents, not exceeding three, returned within forty days after the opening of proposals. Those who have not submitted a bid will receive a refund of one-half of the deposit for each set of documents, not exceeding three, returned within forty days after the opening of proposals.

THE PORT OF NEW YORK AUTHORITY
S. Sloan Colt, Chairman

New York, October 22, 1959

Bids: See Advertisement

Iraqi Republic
Iraqi Ports Administration—Basrah

Tenders are invited for the supply and delivery at Port Stores Jubailah—Basrah of the following materials:—

	Closing Date
1) Tender for the supply of Domestic Electrical Installations Materials	15.11.1959
2) Tender for the Supply of Light Buoys, with Mooring, Lanterns, Gas Accumulators and spares	15.11.1959
3) Tender for the supply of an Ideal operating Theatre complete with all its Appendages from Aneasthesia and Sterilisation Equipment for a Surgical unit of 50 bed capacity	22.11.1959
4) Tender for the supply of 200 Nos. Domestic Electric Refrigerators & 30 Nos. Air conditioners	22.11.1959
5) Tender for the supply of Electric Accounting Machines and Ancillary Equipment	29.11.1959

Forms of Tender and specifications are obtainable from the Iraqi Republic Representatives or from Mudir, Purchasing and Tender, Iraqi Ports Administration-Basrah, during working hours, on payment of ID.1/— for each Tender (which will not be refunded).

The Tender should reach the Iraqi Ports Administration, before 13.00 hours of the closing date of each tender mentioned above.

Specifications are also available at the Embassy of the Republic of Iraq on payment of $2.80 each.

V.0.3.10.

Bids: November 30, 1959

Supply of Equipment

TENDERS

Tenders are invited for the supply of all or any of the following items of equipment:

(a) Two (2) Electrically driven Pumps 1000 IMP.g.p.m. 50' head.
(b) Two (2) Electrically driven Pumps 1000 IMP.g.p.m. 150' head.
(c) One (1) Transformer 1,250 KVA, 33,000/415V, 60 cycles.
(d) One (1) Liquid earthing Resistor, 33,000 V, A/C, 20 ohms, 30 sec. rating.
(e) Paper insulated multicore cables 660 and 1100 V.
(f) One (1) only 65/70 tons load Railway Well-Wagon. New or re-conditioned.

Specifications and drawings may be obtained on application to the Purchasing Officer, Trinidad and Tobago Electricity Commission, P.O. Box 121, Port of Spain, Trinidad, W.I. Closing date for Tenders 30th November, 1959.

U. S. Government

DEPARTMENT OF THE INTERIOR, Bureau of Reclamation. Sealed bids (Specifications No. DC-5249) will be received at Casper, Wyoming, until 10 a.m., Mountain Standard Time, November 24, 1959, for furnishing labor and materials for 115-KV Additions to Cheyenne Substation, Transmission Division, Wyoming, Missouri River Basin Project. Location Cheyenne, Wyoming. Principal items are 75,000 pounds—furnishing and erecting steel structures; 11,100 cu. yds.—excavation; 245 cu. yds.—concrete; 3 breakers—installing 115-kilovolt, 800 ampere, 1500 mva, power circuit breakers; and other work. Completion time 270 days. For particulars, address Bureau of Reclamation, Building 46, Denver Federal Center, Denver 25, Colorado; P. O. Box 280, Casper, Wyoming; or Building 53, Denver Federal Center, Denver 25, Colorado. Floyd E. Dominy, Commissioner.

Many contractors depend entirely upon the

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of

Engineering News-Record

for Opportunities to bid. They might not see your announcements if printed elsewhere.

You undoubtedly want their bids on your contracts. Make sure of them on your next contract.

The cost is only $2.40 a line per issue.

OFFICIAL PROPOSALS

Bids: November 30, 1959

Supply of Equipment

Tenders are invited for the supply of all or any of the following items of equipment:—

(a) Line hardware equipment.
(b) All aluminum conductors, aluminum conductors steel reinforced, duplex and triplex low voltage overhead service conductor.
(c) Wallaba (Eperna spp) round wood poles.
(d) Self-supporting overhead pilot and earth conductor cable.
(e) 12 kV indoor metalclad switchboard.
(f) Fluorescent street lighting fittings and photo electric control units.
(g) Glass Disc Insulators.
(h) L.V. Service Line fuse connectors.
(i) Transformer Oil to BSS 148 (1951).

Specifications may be obtained on application to the Purchasing Officer, Trinidad & Tobago Electricity Commission, P.O. Box 121, Port-of-Spain, Trinidad, W.I. Closing date for Tenders 30th November, 1959.

EMPLOYMENT OPPORTUNITIES

Send NEW Ads and Inquiries to Classified Advertising Division of ENGINEERING NEWS-RECORD, P. O. Box 12, N. Y. 36.

ADDRESS BOX NO. REPLIES TO: Box. No. Classified Adv. Div. of this publication. Send to office nearest you.
NEW YORK 36: P. O. BOX 12
CHICAGO 11: 520 N. Michigan Ave.
SAN FRANCISCO 4: 68 Post St.

• POSITIONS VACANT

Town Engineer with experience in sewerage and sewage treatment, water distribution and municipal engineering: Salary open. Forward resume to Town of Vestal, New York.

Estimator wanted for heavy construction. Must be familiar with take-off, pricing, purchasing and subcontracts for highways, dams, airports and similar work. Location in New York City but involves travel throughout eastern part of the United States. Reply, covering experience, personal data and salary requirement, to P-2711, Engineering News-Record.

Sales Representatives: Topographic mapping surveying and sales experience desired—American Air Surveys, 907 Penn Ave., Pittsburgh 22, Pa.

Estimator—Top pay and working conditions for a fully experienced productive competitive estimator. Wingate Construction Company, 34 South 17th St., Phila. 3, Pa.

Architect or Architectural Engineer. B.S. with experience or M.S. Degree. Research on the development of steel curtain-wall systems and residential applications of steel products. Work includes design, laboratory testing, development of manufacturing processes and supervision of field trials. Large Research Laboratory Pittsburgh area. Submit resume and salary requirements to P-2808, Engineering News-Record.

General Superintendent. To take over our field forces. We are looking for a man that can supervise foreman and superintendents as well as train new men. Our work is in the heavy engineering work, sewerage and water treatment plus several missile contracts. Location: Midwest. P-2840, Engineering News-Record.

Office Engineer. We are interested in a man to do Quantity Take-off and to take some of the paper work and general office work off the managers hands. Location: Midwest. P-2846, Engineering News-Record.

Wanted: Civil Engineers and drafting personnel to do street and sewer design. Apply stating minimum salary to Personnel Department, City Hall, Springfield, Missouri.

(Continued on opposite page)

• POSITIONS VACANT
(Continued from opposite page)

Junior Civil Engineer: Recent graduate to work in the Underground Distribution Section of our Engineering Department. Work will consist of structural design of diversified nature including traffic reinforced concrete substructures, complex conduit systems, coordination of contracts, construction of underground distribution systems and other varying duties. Position located in San Bernardino in Southern California close to beaches, mountains, and desert resorts. Starting salary is $501.78 per month plus allowance for experience, and excellent fringe benefits. If interested in expanding Company with excellent future possibilities, please contact the Personnel Department, California Electric Power Company, P.O. Box 1029, San Bernardino, California.

Civil Engineers experienced in design of sanitary engineering projects or in related fields, including one experienced and qualified specification writer. Mid-West location. Please send complete resume. P-2556, Engineering News-Record.

Director of Public Works—Must be capable of assuming full responsibility for administration of Engineering, Sanitation and Street Divisions. Salary Open. Civil Service. Write Mayor E. R. Hammond, City Hall, Kenosha, Wisconsin.

Water Manager—Must possess technical and management ability to supervise municipally-owned water utility. Civil Service. Salary Open. Write Mayor E. R. Hammond, City Hall, Kenosha, Wisconsin.

Engineers—We have several vacancies for young graduates, preferred age: 25-30. Please furnish resume of experience and education, salary requirements, and availability to the Personnel Manager, c/o Arthur Venneri Company, 1906 K Street, N. W., Washington 6, D. C.

Civil Engineer: For permanent work in the Engr. Dept. of small, busy electrified railroad. Experience not necessary if a graduate Civil. D. F. Lyons, CSS&SBRR, Michigan City, Indiana.

Structural Engineer: Graduate from a four year college or university with major course work in structural engineering plus 3 years experience. Salary $6448-7800 per annum. Complete details by writing to Director of Personnel, Municipal Building, Hartford, Conn.

Engineers. Permanent Civil Service Status. 10 million dollar Capital Improvement Program. Jr. Civil Engineer, $501-$609; Asst. Civil Engineer, $580-$705; Assoc. Civil Engineer, $656-$797; Sanitary Engineer, $552-$671. Apply Personnel Department, City Hall, Stockton, California.

Master Mechanic and Maintenance Supervisor —Midwest heavy construction firm. Ideal working conditions and many desirable fringe benefits. P-2879, Engineering News-Record.

Engineers—Wanted by New York State Department of Civil Service to prepare and rate engineering examinations. Vacancies exist in Albany for Senior Engineering Examiner $6410 to $7760 and Associate Engineering Examiner $7818 to $9408. Nationwide written tests on December 12, 1959 for qualified citizens of the United States. If eligible candidates may compete in both tests. Candidates must have a B.S. degree in Civil Engineering and two years of experience in professional engineering, or preparing and rating engineering examinations or teaching engineering subjects in a recognized college, or a combination of the above. For the Associate position candidates must have one additional year of the above experience and a New York State professional engineer's license. Non-residents of the State must have a professional engineer's license recognized as equivalent to the New York State license from the state or territory of the United States in which they live or have place of business. For detailed announcements and application blanks write to Box 12, Recruitment Unit, New York State Department of Civil Service, State Campus, Albany 1, N.Y.

Engineer, Architectural, Structural or Civil- experienced in prestressed concrete design. Send references, resume, date available and salary requirements to Box 10368, San Antonio 21, Texas.

Construction Engineer—Age 25 to 35—Work under General Superintendent, organize and layout job, some purchasing. Capable of handling job personnel and subcontractors. Aggressive and cost conscious. Considerable travel involved. Excellent opportunity. State education, experience and references. Reply to P-2862, Engineering News-Record.

ENGINEERS

HIGHWAY SANITARY

Permanent positions open for experienced engineers in highway or sanitary engineering design. Reply fully, stating present salary, income requirements, experience, age, education and registration. Local interview will be arranged.

MISSMAN, STANLEY, FARMER & ASSOCIATES
CIVIL ENGINEERS
P. O. Box 736 Rock Island, Illinois

WANTED—FOR LARGE OFFSHORE CONSTRUCTION PROJECT GREENLAND

Personnel Manager

Live in camp, no families, eight-month contract. Handle personnel and labor relations operation for camp of 1800 employees. Minimum five years' experience. Age over 25 years. Future potential for right man.

Security Director

Live in camp, no families, eight-month contract. Handle complete security operation for camp of 1800 employees.

Minimum five years' experience. Age over 25 years. Future potential for right man.

P-2761—Engineering News-Record
Class Adv. Div., P.O. Box 12, N.Y. 36, N.Y.

ENGINEER

Civil Engineer for planning and design of hydroelectric projects. Minimum five years of experience in hydro work required. Send complete resume of experience and qualifications to Personnel Department.

HARZA ENGINEERING COMPANY
400 W. Madison St., Chicago 6, Illinois

FACTORY REPRESENTATIVES OR SALESMEN

Contacting state highway departments, municipalities and contractors either direct or thru dealers. High potential items—6000 C/P, L.P. gas floodlights and kerosene flashing warning lights. Excellent opportunity for proven representatives with limited other lines.

WILLIAM W. LEE & SON
20 E. Jackson Chicago 4, Illinois

CONSTRUCTION MANAGER

Long established firm of engineers has opportunity for man to manage the construction of a large Chemical project in the southern U. S.

Minimum of 15 years' experience on similar projects required.

Opportunity of continued employment.

Send complete resume and salary requirement to

ET-42, P.O. BOX 2069
PHILADELPHIA 3, PA.

SUPERINTENDENT FOR MAJOR STRUCTURAL STEEL FABRICATING PLANT

THIS IS THE MAN we are seeking to manage our Mid-East Steel Fabricating Plant:

He must be experienced in all phases of structural steel fabrication methods and costs—

He must be able to handle men—

He must have sterling references as to business ability, stability and character.

Preferably he should have a college education and with an unusual record of job accomplishments.

If you are this man—the only way we will know is to hear from you. Make your resume as complete as possible, including age and pertinent facts which you feel would give you an "edge" over other applicants.

Excellent salary.

Write in strict confidence to

P-2826, Engineering News-Record
520 N. Michigan Ave., Chicago 11, Ill.

ENGINEERS DESIGNERS

Must have at least 10 years responsible design experience in structural steel, pressure vessels, instrumentation, heavy machinery or piping for:

OIL REFINERIES
CHEMICAL PLANTS
STEEL PLANTS
HEAVY INDUSTRY

Openings at our Cleveland offices.
Send detailed resume to:

G. VICTOR HOPKINS

ARTHUR G. McKEE & CO.
2300 Chester Ave., Cleveland 1, Ohio

WANTED

We are a growing Corporation doing about $4,000,000.00 worth of structure, bridge, marine and paving work annually, operating in Midwest and Mid-Atlantic area.

We are looking for top notch field supervision

preferably under 45, with or without college. Must be ambitious, intelligent, honest, alert, and aggressive. Liberal salary and benefits, bonus if earned. We are looking for permanent employees who want to better themselves. Reply to:

Box 5047 Lawndale Branch
Evansville, Indiana

EMPLOYMENT OPPORTUNITIES

• POSITIONS VACANT
(Continued from preceding page)

Civil Engineers—Soil Mechanics Engineers or other civil engineers with interest in soil mechanics and several years structural or construction experience. East and West Coast locations. Submit resume and salary requirements to P-2874, Engineering News-Record.

Computer Programmer. Leading Machinery manufacturer has interesting opening for recent mechanical engineering graduate to learn programming of engineering data on modern electronic computer. No experience required, company will train, good starting salary, and benefits. Location is New York Metropolitan area. Please submit resume in confidence to I. P. Schmidt, Worthington Corporation, Harrison, New Jersey.

• EMPLOYMENT SERVICE

Better Positions—$6,000 to $35,000. Want a substantial salary increase, more opportunity or different location? This national 48 year old service connects you with best openings. You pay us only nominal fee for negotiations: This we refund when employer pays placement fee. Present position protected. In complete confidence, write for particulars. R. W. Bixby, Inc., 559 Brisbane Bldg., Buffalo, N. Y.

• POSITIONS WANTED

Structural Eng. B.S.C.E. 35 reg. 10 yrs. broad experience. Desires full responsibility for structural design with architect-engineering firm in Mid West. PW-2796, Engineering News-Record.

Construction Supt. General Construction. PW-8896, Engineering News-Record.

Construction Manager; Wide experience in general contracting field as general supt., job supt. Thoroughly familiar with office and field methods and procedure. Available soon. PW-2708, Engineering News-Record.

Construction Superintendent: Top level only. Available, immediately. PW-2715, Engineering News-Record.

Attention American Manufacturers wishing to locate in Britain for the Commonwealth & European Markets: British born, American trained executive; sales, administration & engineering; excellent connections in construction equipment field in both countries; will set up American organization in Britain; inquiries treated with confidence; principals only. PW-2595, Engineering News-Record.

Construction Engineer, BSME, P.E. Mo. 20 years experience, 10 foreign, in all phases of project development. Desire position as Superintendent, Resident Engineer, Service Engineer or Project Manager. Present position Project Manager in Peru. Speak Spanish. Available in November for foreign employment prefer Latin countries, especially Mexico. PW-2851, Engineering News-Record.

Position desired as Construction Inspector— over 35 years masonry experience. Prefer small community. Presently employed. Salary secondary to opportunity. PW-2813, Engineering News-Record.

Executive, broad experience in all phases of Building and Heavy Construction, seeks contacts with large volume contractors requiring top man to assume full responsibility. C. O. Sutherland, 47 Rich Avenue, Mount Vernon, N.Y. Telephone MO 4-7927.

Available: Sales Engineer. Graduate M.E. Presently located San Francisco Area. Ten years Sales Engineering experience. PW-2817, Engineering News-Record.

Proj. Engr. and Constr. Mgr.-Office and Field Engr. for A.&E. firm, contractor or corporation owner. Registered, grad. C.E., 20 yrs. responsible gen'l. contracting and engr'g. experience in bldg. constr. and airfields incl. estimating, contract negot'n, field supervision, surveying, new business, arch't.-owner-gov't. relations. Now located D.C. area. Available Nov. 15. PW-2806, Engineering News-Record.

Teaching career sought by '56 graduate. BCE and EIT in N.Y.S. Experience in highway & bridge design & construction. PW-2815, Engineering News-Record.

Attorney—Engineer B.S.C.E., L.L.B. Age 30, Recent Law Graduate Member of the Bar, Six years experience—Design, specification and report writing. Desires employment utilizing both engineering and law degree. Employed in present position four years. PW-2876, Engineering News-Record.

• POSITIONS WANTED

Construction Superintendent. 35 years experience on all types construction-industrial, schools, etc. Age 55 married. Wants responsible position. Will relocate. PW-2732, Engineering News-Record.

Heavy Construction Engineer. 45. 20 yrs. exp. from estimate, bid preparation, plant construction to project completion, field engr. office engr., costing, estimation, supervision and assistance to crafts superintendents during project. Served as Ch. Engr. on hydrodams & powerhouses, highways, bridges, etc. PW-2894, Engineering News-Record.

Supt. or Proj. Engr.—Married—Age 31—Experienced in all phases of highway const. estimating & supervision. I.C.S. Educ. presently located in metropolitan area. PW-2870, Engineering News-Record.

Graduate Civil Engineer-Registered Land Surveyor, 32, 10 yrs. experience; land surveying, subdividing including sewer, water, and road design. Location open. PW-2864, Engineering News-Record.

Civil Engineer, 25, single, desires foreign employment. Experience in Soils, Concrete, and heavy equipment maintenance. PW-2853, Engineering News-Record.

Architect—Overseas — Adept— Registered, degree, 36, married, broad experience including overseas military facilities. PW-2881, Engineering News-Record.

• POSITIONS WANTED

Project Management. Top References. 22 years exp., incl. negotiating contracts, contract administration, processing claims. Heavy constr. U. S. and O. S. PW-2816, Engineering News-Record.

Graduate Civil Engineer, 3 years construction experience on building highway and heavy construction. Desires engineering or supervisory position in the Northeast. Philip Grover, 29 Prospect St., Norwood, N. Y.

Engineer, M.S. in C.E., 33, Married, desires association with small engineering, construction, or manufacturing concern. Presently foreign assignment, available November. Experience includes eight years supervisory positions on building, refinery, and general construction as well as contract negotiations. Resume on request. PW-2883, Engineering News-Record.

Traffic Engineer, now Assist. State Traffic Engineer for an Eastern State for over 4 years, seeks change of position with responsibility. B.S.C.E., Yale Unit, Bureau of Highway Traffic, P.E., young imaginative, industrous. PW-2880, Engineering News-Record.

Estimator, General Construction, twenty-one years experience in costs, quantity take-off, buying, sub-letting on industrial, public buildings and sewage treatment plants. Thirteen years with present employer. Minimum salary $12,500.00. California position preferred. PW-2884, Engineering News-Record.

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The Executor of the Estate of

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will consider all offers for the purchase of fifty per cent (50%) of the capital stock of

Sangamo Construction Co.

of Springfield, Illinois, a Delaware corporation

Interested persons are requested to communicate with:

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Drach, Howarth and Terrell
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Springfield, Illinois

Montgomery S. Winning
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First National Bank Building
Springfield, Illinois

or

Dorothy Kewley
1620 Bates Avenue
Springfield, Ill.

• CONTRACT WORK WANTED

At liberty—160 man hours (or more) of competent, efficient and accurate structural steel detailing. R. S. Leibelson Assoc., 8906 Glenville Road, Silver Spring, Md.

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ARCHITECTURAL ENGINEERING
OUR COURSES of instruction by mail HAVE HELPED THOUSANDS to better positions and to pass State Board Examinations. Forty-eighth year.
WILSON *Engineering Corp.*
College House Offices HARVARD SQ., CAMBRIDGE, MASS.

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Top Condition *Located in New England*
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Bought New—1957
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Headquarters for REPAIRS — any make — Factory Service We will also buy your old instruments or take them in *trade*.

A complete line of Engineering Instruments and equipment for field or office. Write for catalog NRL 910.

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Manufacturers of Transits and Levels
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FOR SALE . . . VERY LOW PRICE

Steel Forms for Tunnel or Culvert

Manufactured by Blaw-Knox Company

2—Collapsible inside forms 40' long x 30' wide x 15' high, curved top, for single tube

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4—Collapsible inside forms 40' long x 30' wide x 15' high, curved top, for twin tube

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Also steel forms for air duct and walkway

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2½ YD. LINK-BELT CRANE-DRAGLINE
K-595, 140' BOOM & JIB
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50 TON AMER. DIESEL LOCOMOTIVE CRANE. 1946
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AMERICAN 2140 3D DIESEL HOIST
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Also Other Constr. & Ry. Equip.

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1905 Railway Exchange Bldg., St. Louis 1, Mo.
CHestnut 1-4474

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EUCLIDS: Rear, Bottom and Scrapers
5W Bucyrus-Erie Dragline, 3½ yd.
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200W Bucyrus-Erie Dragline, 6 yd.
170B Bucyrus-Erie Shovel, 6½ yd.
120B Bucyrus-Erie Shovel, 5 yd.
54B Bucyrus-Erie Shovel, 2½ yd.
38B Bucyrus-Erie Shovel, 1¾ yd.
80D Northwest Shovel, 2½ yd.
4500 Manitowoc Dragline, 5 yd.
3000 Manitowoc Dragline, 1¾ yd.
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1½ yd. Marion Shovel. New in 1956.

SHOVELS—DRAGLINES—CRANES
(All sizes, makes, Crawler and walking type)

WILLIAM LUBRECHT, III
Construction Equipment
311 W. Diamond Ave. Hazleton, Pa.
Telephone GI 5-4041 or 5-0253

FOR SALE

MARION—Model 111M, Shovel, GM Diesel, Standard Front, 3½ Yd. Dipper. Rebuilt.

ANDERSON EQUIPMENT COMPANY
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Phone: LEhigh 1-6020

U. S. Army Telephones EE-8 fully reconditioned. Suitable for intercommunication between 2 or more points. $35.00 for 2 telephones, including 100 ft. of wire and batteries. Additional wire 1¢ per ft. or $25.00 per mile. Write for free list on telephones. All shipments F.O.B. Simpson, Pa.

TELEPHONE ENGINEERING CO.
Dept. ENR-209 Simpson, Pa.

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DRAGLINES, SHOVELS, CRANES, DRILLS, TRUCKS

15-W Bucyrus Erie Elec. Drag, 215', 13 yd.
9-W Bucyrus Erie Elec. Drag, 160', 11½ yd.
9-W Bucyrus Erie Diesel Drag, 200', 9 yd.
7-W Bucyrus Erie Elec. Drag, 140', 7 yd.
7-W Bucyrus Erie Diesel Drag, 140', 7 yd.
7400 Marion Diesel Drag, 175', 13 yd.
7400 Marion Elec. Drag, 175', 12 yd.
625 Page Diesel Drag, 160', 9 yd.
360-M Marion Elec. Drag, 175', 8 yd.
621-S Page Diesel Drag, 125', 7 yd.
200-W Bucyrus Erie Diesel Drag, 125', 6 yd.
5-W Bucyrus Erie Diesel Drag, 100', 6 yd.
2400 Lima Dragline, 130', 5 yd.
4500 Manitowoc Drag, 120', 5 yd.
120-B Bucyrus Erie Elec. Drag, 115', 5 yd.
3900, 3500 & 3000 Manitowoc Cranes
111-M Marion Drag, 100', 4 yd.
1601 Lima 4 yd. Shovel/Drag
1055 P&H Drag, 80', 3½ yd.
1201 Lima Dragline, 85', 3 yd.
54-B Bucyrus Erie Drag, 80', 2½ yd.
5560 Marion 26 yard Elec. Shovel
550-B Bucyrus Erie 25 yard Elec. Shovel
750-B Bucyrus Erie 20 yd. Elec. Shovel
1050-B Bucyrus Erie 20 yd. Elec. Shovel
5480 Marion 18 yd. Elec. H. L. Shovel
151-M Marion 7 yd. Elec. Shovel
170-B Bucyrus Erie 6½ yd. Elec. Shovel
4161 Marion 6 yd. Elec. Shovel
120-B Bucyrus Erie 4 yd. Elec. Shovel
111-M Marion 4 yd. Standard Shovel
54-B Bucyrus Erie 2½ yd. Standard Shovel
Large selection of smaller Shovels and Draglines available
Model T-650 Reich Truck Mounted Rotary and Down-The-Hole Drill
Euclid Trucks, rear & bottom dump
Truck Cranes, Dozers, Scrapers, Attachments

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313 Hazleton Nat'l Bank Bldg.
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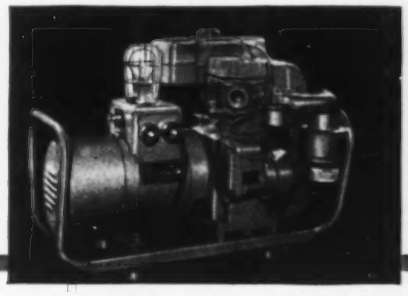

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In Behalf of Highway Officials

HIGHWAY OFFICIALS—state and federal—are a hardy lot; they have to be. In their primary function of providing the states with roads and the nation with an Interstate network, they are constantly under pressure from many directions. Right now, with the vast 90-10 federal-state program somewhat strapped for funds, the men who run the state highway departments and the federal government's Bureau of Public Roads are under especially heavy pressures both at home and in Washington.

Principally, their joint responsibility is to give the nation the 41,000-mile Interstate net it wants, at standards that will meet 1975 needs and at the least possible cost. These state and federal highway officials are responsible engineers and administrators bent on success at this difficult and sizable assignment.

In Boston last week at the annual meeting of the American Association of State Highway Officials there was ample evidence of the pressures from Washington (see p. 21). There were reports on the Administration's study by Gen. John S. Bragdon, the President's public works advisor. His study (ENR Oct. 8, p. 22) has concerned itself with Defense Department demands on the Interstate roads, including pressure for increased vertical clearances under highway overpasses. Although it could add $300 million to the cost of the program, this was the legitimate kind of demand that AASHO could unanimously and immediately recommend to the Commerce Department for approval. But there was strong opposition to another Administration recommendation—that cities pay for extension of the Interstate routes into urban centers.

AASHO also felt Congressional pressures in Boston. They heard from Congressmen who will be involved in a House subcommittee's investigation of the highway program such words as "extravagance," "waste," "graft," "skullduggery," "wrongdoing," "inefficiency" and "fraud." They also heard evidence of squabbling between committeemen who will search for these things.

Whenever federal money is spent on a project as big as the highway program, both the Administration and Congress have a real and rightful concern that it be spent effectively and honestly. There certainly should be a close check kept on the program. Bureau of Public Roads' Ellis L. Armstrong spoke for federal and state highway officials last week in saying investigation will be welcomed.

The planned investigation is indeed welcomed, but the Congressional investigators should not be too disappointed if they fail to uncover any major scandals. Nor should their probe deter the highway officials from their primary function of putting roadbuilders to work promptly on all the approved highway work that the available money will buy.

This Congressional investigation is important, as are the White House studies, but both should be considered in proper perspective, along with the continuing basic studies into highway design, safety and finance authorized by the original Highway Act of 1956. And nothing should unduly hamper future progress of the highway officials. They alone can execute the road program.

Longer Spans for Safety

MANY BRIDGE DESIGNERS would like to eliminate columns under highway overpasses for greater driving safety. This is apparent from a study of the entries in the steel highway bridge design contest (see p. 30).

Despite the higher cost of long spans, many participants prefer to bridge a four-lane highway with a single span.

Whether those who pay for the bridges will be willing to pay the premium for long spans in return for greater driving safety remains to be seen. The decision undoubtedly depends on how much the premium amounts to.

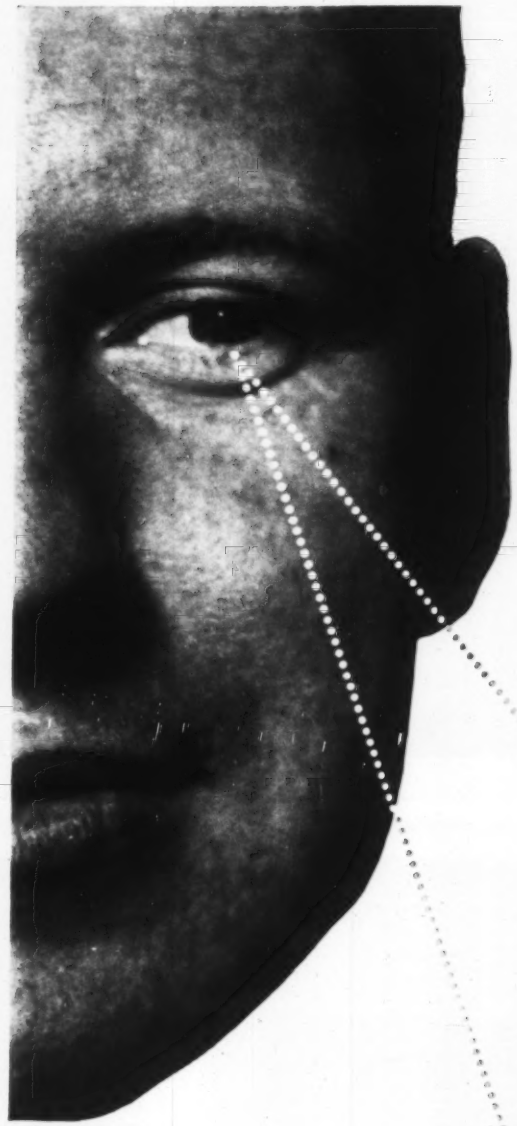
A single long span has an inherent saving accruing from elimination of some foundations, piers or columns and bearings. But in general, this saving is seldom big enough to justify long-span construction where short spans can be used. New thinking is needed if the cost differential is to make longer spans competitive.

The American Bridge design contest stimulated such thinking. It generated many excellent suggestions for cutting the costs of long-span construction. These included restraining the ends of the main girders, developing continuity with columns and side spans, sloping the columns to reduce the girder spans, getting the deck to participate with the girders and deck framing in carrying the loads, standardizing bridge components and applying prestress.

The techniques are not mutually exclusive. Two or more can be used together to reduce the premium for long spans. The prestressing proposal is particularly intriguing because this method can be adapted to strengthen older bridges not designed for current loads.

Perhaps even more effective cost-cutting ideas might have been advanced by contestants if the competition rules had been different. Entries had to comply with existing standards, many of which are over-conservative. It is interesting to speculate what the winners of the competition would have been like if the rules had been less restrictive.

But even without radical designs, the cost-cutting ideas developed by the competition, used in combination, can make a sizable dent in the long-span premium. Let's find out exactly how much more it will cost to eliminate columns under highway overpasses when advantage is taken of the best of these ideas. It may turn out that the price for greater driving safety is small.



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